TYAN® FT48

B8812

Service Engineer's Manual

PREFACE

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Version 1.00

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device must not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesirable operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice for Canada

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This product is in conformity with the Council Directive 2004/108/EC..

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

About this Manual

This manual provides you with instructions on installing your TYAN® FT48. This Manual is intended for experienced users and integrators with hardware knowledge of personal computers.

This manual consists of the following parts:

Chapter1: Provides an introduction to the FT48-B8812 bare--bones, standard parts list, describes the external components, gives a table of key components, and provides block diagram of the system.

Chapter2: Give a compeleted introduction to the motherboard information with detailed description about jumpers, It also covers procedures on installing the CPU, memory modules.

Chapter3: Give an general idea of the FT48-B8812 barebone including the LED definition.

Chapter4: Covers the procedures on installing the hard drives, installing the server on a rack.

Chapter5: Covers removal and replacement procedures for pre-installed components.

Chapter6: Give an integrated illustration for the S8812/ FT48 -B8812 BIOS settings.

Appendix: List the BIOS differences, cable connection and FRU part tables for reference of system setup, and technical support in case a problem arises with your system.

SAFETY INFORMATION

Before installing and using FT48-B8812, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the power company.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the pur--pose of this pin. If you outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high volta--ge components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manuf--acturer.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

Table of Contents

Chapter 1: Overview 9
1.1 About the TYAN FT48-B8812 9
1.2 Product Models 9
1.3 Features 10
1.4 Standard Parts List 12
1.4.1 Box Contents 12
1.4.2 Accessories 13
Chapter 2: Board Installation 15
2.1 Board Image 16
2.2 Block Diagram 17
2.3 Board Parts, Jumpers and Connectors 18
2.4 Installing the Processor and Heat sink 30
2.5 Thermal Interface Material 33
2.6 Tips on Installing Motherboard in Chassis 34
2.7 Installing the Memory 36
2.8 Attaching Drive Cables 43
2.9 Installing Add-In Cards 44
2.10 Connecting External Devices 45
2.11 Installing the Power Supply 46
2.12 Finishing Up 47
Chapter 3: About the Barebone 49
3.1.1 System Front View 49
3.1.2 System Rear View 50
3.1.3 LED Definitions 50
3.1.4 Internal View 52
Chapter 4: Setting Up 53
4.0.1 Before you Begin 53
4.0.2 Work Area 53
4.0.3 Tools 53
4.0.4 Precautions 54
4.1 Installing Motherboard Components 55
4.1.1 Removing the Chassis Cover 55
4.1.2 Installing the PCI-E Cards 56
4.2 Installing Hard Drives 58
4.3 Rack Mounting 60
4.3.1 Installing the Server in a Rack 60
4.4 Opening the Chassis Front Bezel 63
Chapter 5: Replacing Pre-Installed Components 65
5.1 Introduction 65

5.2 Disassembly Flowchart 65
5.3 Removing the Cover 66
5.4 Replacing the System Fan and Fan Board 66
5.4.1 M1801F77 Fan Board Features 68
5.4.2 M1801F77 Fan Board Connector Pin Definition 69
5.5 Replacing M1237F48 SATA/SAS Backplane 70
5.5.1 M1237F48 SATA/SAS Backplane Features 71
5.6 Replacing the Front Panel Control Board 73
5.6.1 M1018 LED Control Board Features 75
5.6.2 M1018 LED Control Board Connector Pin Definition 76
5.7 Replacing Power Supply and M7025 PDB 77
5.7.1 Replacing Power Supply 77
5.7.2 Replacing M7025 Power Distribution Board 78
5.7.3 M7025 Power Distribution Board Features 80
5.7.4 M7025 PDB Connector Pin Definition 81
5.8 Replacing S8812 System Board 83
Chapter 6: BIOS Setup 85
6.1 About the BIOS 85
6.2 Main Menu 87
6.3 Advanced Menu 88
6.4 PCI/PnP Menu 115
6.5 Boot Menu 117
6.6 Security Menu 119
6.7 Chipset Menu 121
6.8 Exit Menu 132
Appendix I: BIOS Differences 135
Appendix II: Cable Connection Tables 143
Appendix III: FRU Parts Table 145
Appendix IV: Technical Support 147

Chapter 1: Overview

1.1 About the TYAN FT48-B8812

Congratulations on your purchase of the TYAN® FT48-B8812, a highly optimized rack-mountable 4U barebone system. FT48-B8812F48W8HR is designed to support AMD 45nm 8-Core/12-Core Opteron 6100 Series processors and up to 256GB of 800, 1066 and 1333MHz **UNB** or **REG/ECC** DDR3 memory. There are also 16 channels with 32 DDR3 DIMMs, providing a rich feature set and incredible performance. Leveraging advanced technology from AMD®, FT48-B8812 server system is capable of offering scalable 32 and 64-bit computing, high-bandwidth memory design, and lightning-fast PCI-E Gen2 bus implementation. FT48-B8812 not only enpowers your company in today's demanding IT environment but also offers a smooth path for future application usage.FT48-B8812 uses rack-mountable 4U chassis featuring a robust structure and a solid mechanical enclosure. All of this provides FT48-B8812 the power and flexibility to meet the needs of nearly any server application.

1.2 Product Models

Model	HDD Bays	Power supply
FT48-B8812F48W8HR	**(4) 3.5" Hot-Swap HDD Bays; Extra (8) hot-swap trays available**	**ERP1U hot-swap / (2+1)**

1.3 Features

TYAN FT48B8812 (B8812F48W8HR)

System	Form Factor	4U Rackmount/Tower
	Chassis Model	FT48
	Dimension (D x W x H)	27.5" x 16.8" x 6.9" (700 x 427 x 176mm)
	Motherboard	S8812WGM3NR
	Board Dimension	MEB, 13"x16.2" (330x411mm)
	Gross Weight	50 kg
Front Panel	Buttons	(1) PWR / (1) RST / (1) NMI / (1) ID
	LEDs	(1) PWR / (1) HDD / (2) LAN / (1) ID / (1) Warning
	I/O Ports	(2) USB ports
External Drive Bay	Type / Q'ty	3.5" Hot-Swap / (8) / (3) 5.25" device bays
	Supported HDD Interface	SAS 3.0Gb/s / SATA-II 3.0Gb/s
System Cooling Configuration	FAN	(6) 12cm fans
Power Supply	Type	ERP1U
	Efficiency	PFC
	Redundancy	2+1
	Input Range	Full-range AC(100-240V)
	Frequency	60 Hertz
	Output Watts	1,540W (2 x 770W)
Processor	Supported CPU Series	AMD 45nm 8-Core/12-Core Opteron 6100 Series Processors (Magny-Cours) / (4) HT3; 12MB L3 per socket
	Socket Type / Q'ty	G34 / (4)
	Average CPU Power (ACP) wattage	Up to 80W
	System Bus	Up to 6.4 GT/s Hyper-Transport link support
Chipset	Chipset	AMD SR5690 + SP5100
	Super I/O	Winbond W83627DHG
Memory	Supported DIMM Qty	(32) DIMM slots
	DIMM Type / Speed	U/RDDR3 & LV RDDR3, 800/1066/1333 MHz
	Capacity	Up to 256GB
	Memory channel	4 Channels per CPU
	Memory voltage	1.5V
Expansion Slots	PCI-E	(2) PCI-E Gen.2 x8 slots(open-end) / (1) PCI-E Gen.2 x16 slot (w/ x16 or x8 link) / (1) PCI-E Gen.2 x8 slot (open-end, / x0 or x8 link)
LAN	Port Q'ty	(3)
	Controller	Intel 82574L / Intel 82576EB
Graphic	Connector type	D-Sub 15-pin
	Resolution	1600x1200@60Hz
	Chipset	Aspeed AST2050

I/O Ports	USB	(4) ports (2 at front, 2 at rear)
	COM	(1) DB-9 COM port
	PS/2	(1) PS/2 connector (for Keyboard and Mouse)
	VGA	(1) D-Sub 15-pin port
	RJ-45	(3) ports
System Monitoring	Chipset	Winbond W83795G
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Temperature	Monitors temperature for CPU & system environment
	LED	Fan fail LED indicator / Over temperature warning indicator
	Others	Chassis intrusion detection / Watchdog timer support
Server Management	Onboard Chipset	Onboard Aspeed AST2050
	AST2050 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash
	AST2050 iKVM Feature	24-bit high quality video compression / Dual 10/100 Mb/s MAC interfaces
BIOS	Brand / ROM size	AMI / 4MB
	Feature	Plug and Play (PnP) /PCI2.3 /WfM2.0 /SMBIOS2.3 /PXE boot / ACPI 2.0 power management /Power on mode after power recovery / User-configurable H/W monitoring / Auto-configurable of hard disk types
Operating System	OS supported list	Please refer to our OS supported list.
Regulation	FCC (DoC)	Class A
	CE (DoC)	Yes
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Complaint	Yes
Package Contains	Barebone	(1) FT48B8812 Barebone
	Manual	(1) User's manual
	Installation CD	(1) TYAN installation CD
	Heatsink / Cooler	(4) G34 CPU heatsinks
	Rail kit	(1) CRAL-0070, sliding rail kit for KFT48
	Mounting Ear	(1) CRBK-0021, Rack mounting handle bracket, right / (1) CRBK-0020, Rack mounting handle bracket, left
	Cable Power Cord	(3) CCBL-0310, US type power cords / (3) CCBL-0300, EU type power cords

1.4 Standard Parts List

This section describes FT48-B8812 package contents and accessories. Open the box carefully and ensure that all components are present and undamaged. The product should arrive packaged as illustrated below.

1.4.1 Box Contents

Component	Description
	(1)4U FT48 Chassis
	(1)MAINBOARD, S8812
	(3)770W,DPS-770AB B DELTA,EPR1U-MODULE
	(6)120X120X38mm FAN 12V/4800RPM/Delta 4-pin
	(1)Front Panel board, Antrada
	(2)M1237 SAS Backplane board
	(1)Power distribution board M7025-PDB-HE
	(1)M1801F77-FAN board

1.4.2 Accessories

If any items are missing or appear damaged, contact your retailer or browse to TYAN's website for service: http://www.tyan.com
The web site also provides information of other TYAN® products, as well as FAQs, compatibility lists, BIOS settings, etc.

Rail Kit

1 x TYAN®
Motherboard Drive CD

4 x Heatsinks

HDD Screws

Power Cables
Left to right: Europe, US

2 x GPU PWR CABLE 2*4Pin

Barebone Manual

2 x Rail with Bracket

Mounting Ears & Screw Sack

Chapter 2: Board Installation

You are now ready to install your motherboard.

How to install our products right… the first time

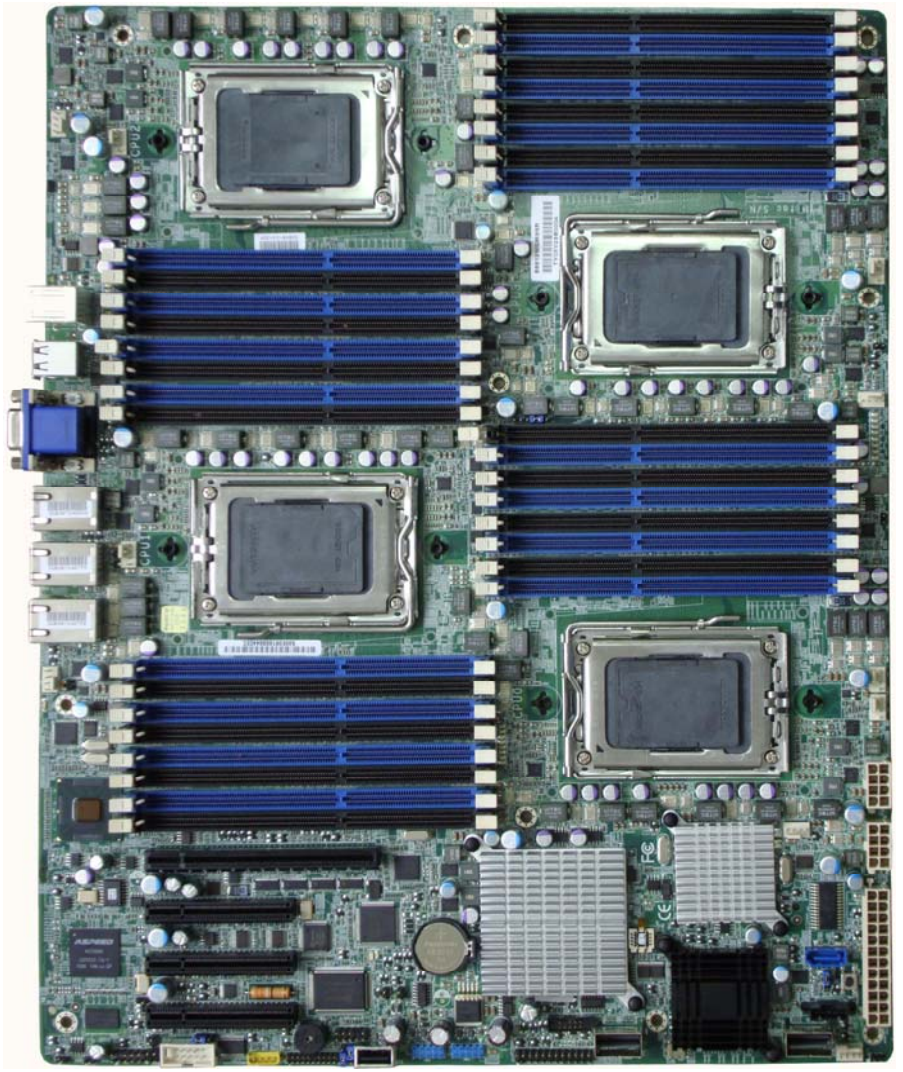
The first thing you should do is reading this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, MiTAC recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

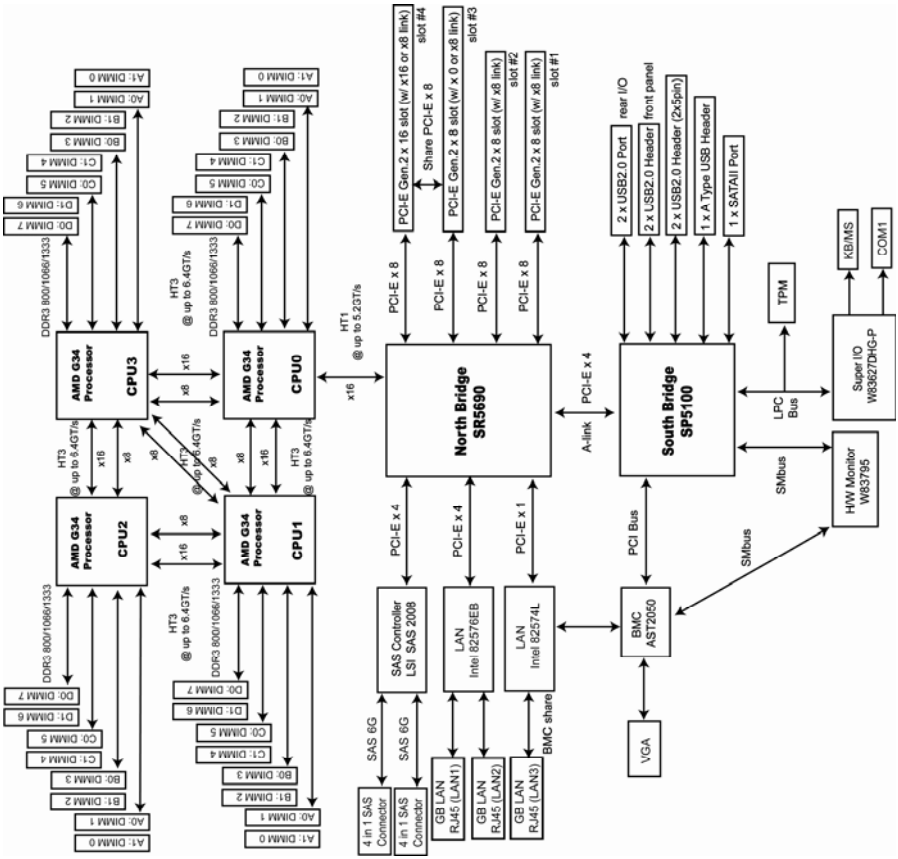
NOTE: Do not apply power to the board if it has been damaged.

2.1 Board Image



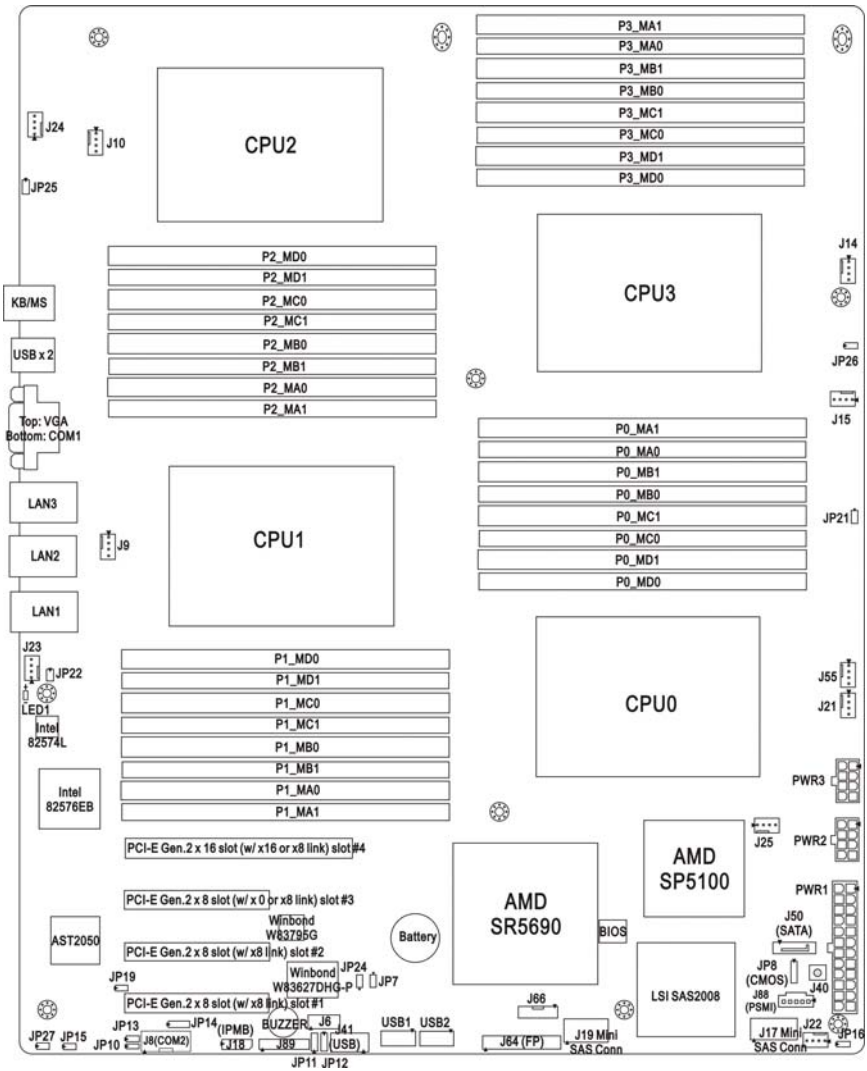
This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

2.2 Block Diagram



S8812 Block Diagram

2.3 Board Parts, Jumpers and Connectors



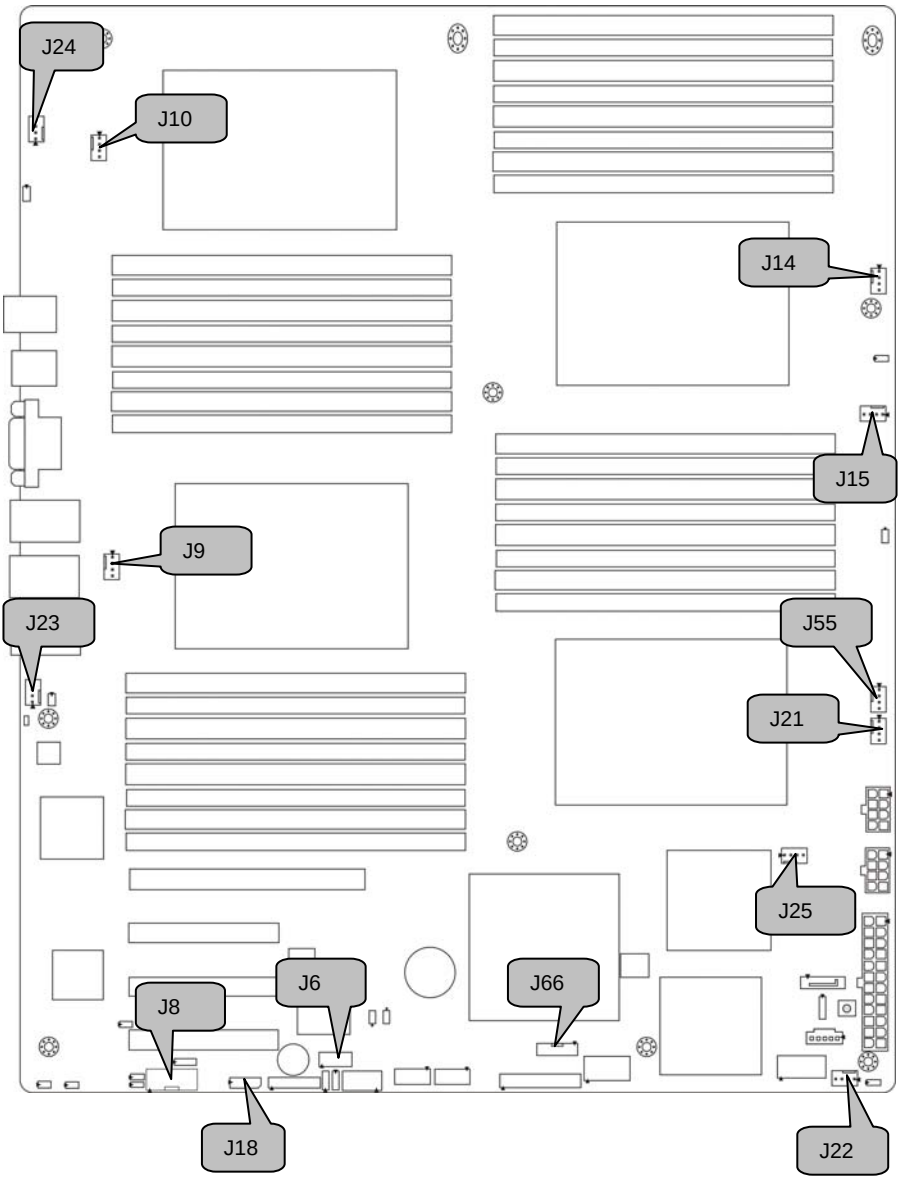
This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram. But for the DIMM number please refer to the above placement for memory installation. For the latest board revision, please visit our web site at http://www.tyan.com.

Jumpers & Connectors

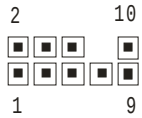
Jumper/Connector	Function
J6	CPLD JTAG Connector
J8 (COM2)	COM2 Header
J9/J10/J14/J15/J21/ J22/J23/J24/J25/J55	4-pin Fan Connectors
J17/J19	Mini SAS Connector
J18 (IPMB)	IPMB Connector
J40	Power Switch
J41 (USB)	Vertical (Type A) USB Connector
J50 (SATA)	Serial ATA Connector
J64 (FP)	Front Panel Connector
J66	SAS Fault LED Connector
J88 (PSMI)	PSMI Connector
J89	Fan TACH Connector
JP7	PCI-E x8/x16 Select Jumper
JP8	Clear CMOS Jumper
JP10	BMC Disable Jumper
JP11/JP12	COM2 Switch Jumper
JP13	TPM Disable Jumper
JP14	COM Power Select Jumper
JP15	WDT Trigger NMI Jumper
JP16	Chassis Intrusion Header
JP19	VGA Disable Jumper
JP21/JP22/JP25/JP26	DDR3 VDDIO Voltage Select Jumper
JP24	LAN2 LED Connector
JP27	ID LED Connector
LED1	ID LED
USB1/USB2	USB Front Panel Header

Jumper Legend

	OPEN - Jumper OFF	Without jumper cover
	CLOSED - Jumper ON	With jumper cover


J24
J10
J14
J15
J9
J23
J55
J21
J25
J6
J66
J8
J18
J22

J6: CPLD JTAG Connector



Signal	Pin	Pin	Signal
TCK	1	2	GND
TDO	3	4	V3DU
TMS	5	6	NC
NC	7	8	KEY
TDI	9	10	GND

J8: COM2 Connector

Signal	Pin	Pin	Signal
DCD	1	2	DSR
RXD	3	4	RTS
TXD	5	6	CTS
DTR	7	8	RI
GND	9	10	NC

J9/J10/J14/J15/J21/J22/J23/J24/J25/J55: 4-Pin FAN Connectors

Pin	1	2	3	4
Signal	GND	+12V	TACH	PWM

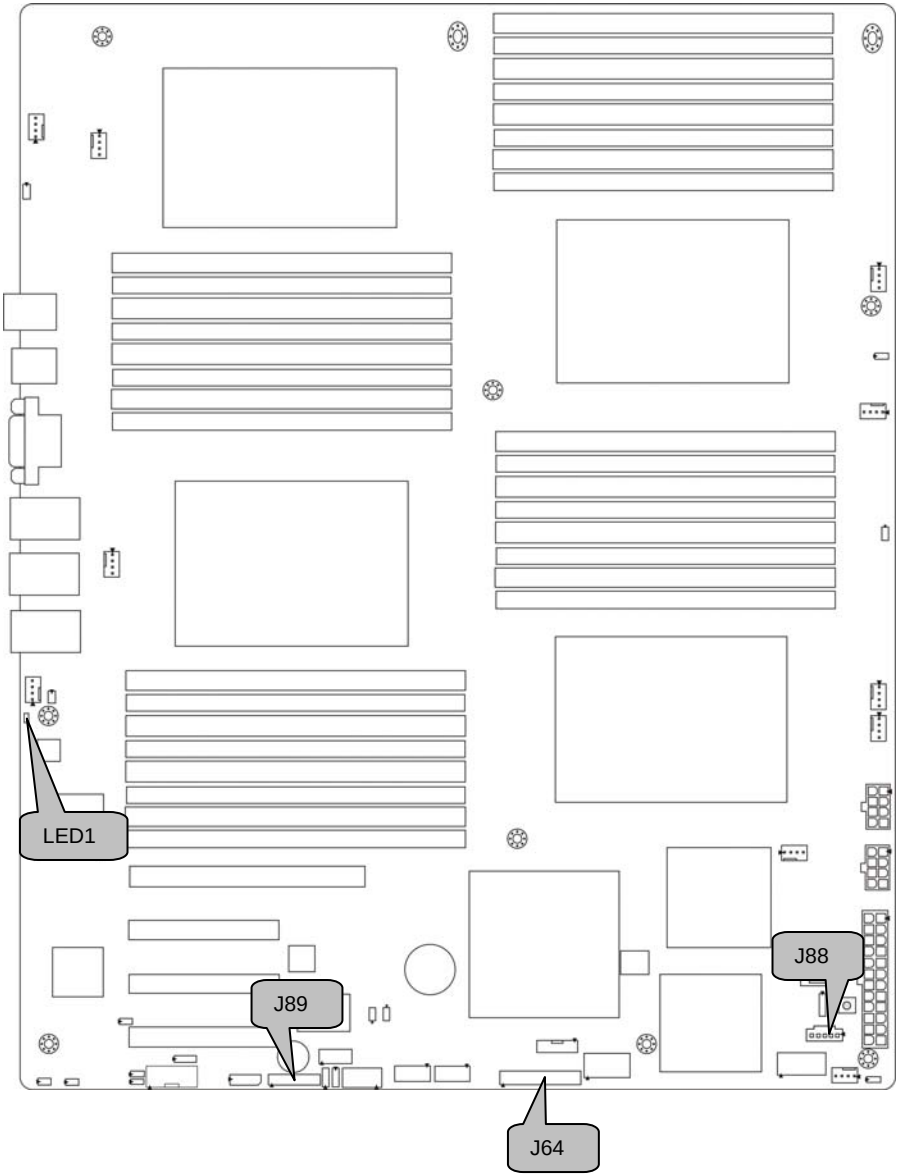
Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable.

J18: IPMB Connector

Signal	Pin	Pin	Signal
IPMB DATA	1	2	GND
IPMB CLK	3	4	NC

J66: SAS Fault LED

Signal	Pin	Pin	Signal
LED_SAS_FAULT-0	1	2	LED_SAS_FAULT-1
LED_SAS_FAULT-2	3	4	LED_SAS_FAULT-3
LED_SAS_FAULT-4	5	6	LED_SAS_FAULT-5
KEY	7	8	LED_SAS_FAULT-7
LED_SAS_FAULT-6	9	10	GND


LED1
J89
J88
J64

J64: Front Panel Connector

Signal	Pin	Pin	Signal
PWR_LED+	1	2	FP_PWR
KEY	3	4	IDLED+
Power LED -	5	6	IDLED-
HD LED+	7	8	WARN_LED-
HD LED -	9	10	PSU_ALERT-
Power SW	11	12	LAN1_LED+
GND	13	14	LAN1_LED-
Reset SW	15	16	SDA
GND	17	18	SCL
ID SW	19	20	INTRUDER_L
TEMP Sensor	21	22	LAN2_LED+
NMI	23	24	LAN2_LED-

J88: PSMI Connector

Pin	1	2	3	4	5
Signal	SMB_SCLK	SMB_SDAT	SMB_ALERT_L	GND	VCC3

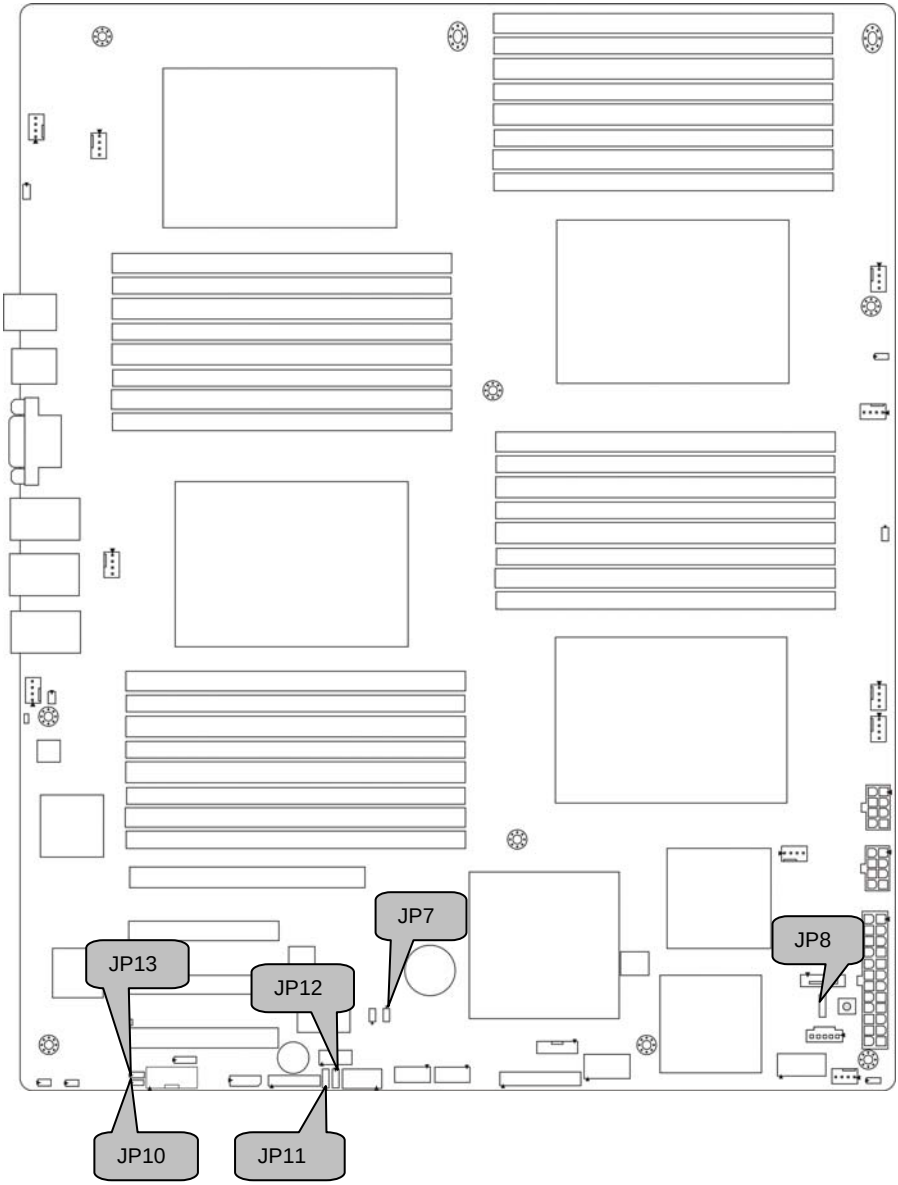
J89: Fan TACH Connector

Signal	Pin	Pin	Signal
Taco 1	1	2	Taco 6
Taco 2	3	4	Taco 7
Taco 3	5	6	Taco 8
Taco 4	7	8	Taco 9
Taco 5	9	10	Taco 10
GND	11	12	KEY
PWM2	13	14	PWM1
Taco 11	15	16	NC
Taco 12	17	18	NC
NC	19	20	PWM3

LED1: ID LED

Pin	Signal	
+	P3V3_AUX	
-	ID_SW_L	
State	**Color**	**Description**
On	Blue	System identified
Off	Off	System not identified

NOTE: IPMI can activate ID LED from remote site.
Please visit the TYAN Web Site at **http://www.tyan.com** to download the latest AST2050 Software Configuration Guide for IPMI settings.


JP7
JP8
JP13
JP12
JP10
JP11

JP7: PCI-E x8/x16 Select Jumper

	Open: PCI-E x16 (slot #4) (**Default**)
	Closed: PCI-E x8 (slot #4) + PCI-E x8 (slot #3)

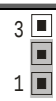
JP8: Clear CMOS Jumper

 Normal (**Default**) Clear CMOS	You can reset CMOS by using this jumper if you have forgotten your system/setup password or need to clear BIOS setting. 1. Power off system and disconnect both power connectors from the motherboard. 2. Put jumper cap back to Pin_1 and Pin_2 (default setting). 3. Use jumper cap to close Pin_2 and Pin_3 for seconds to Clear CMOS. 4. Reconnect power & power on system.

JP10: BMC Disable Jumper

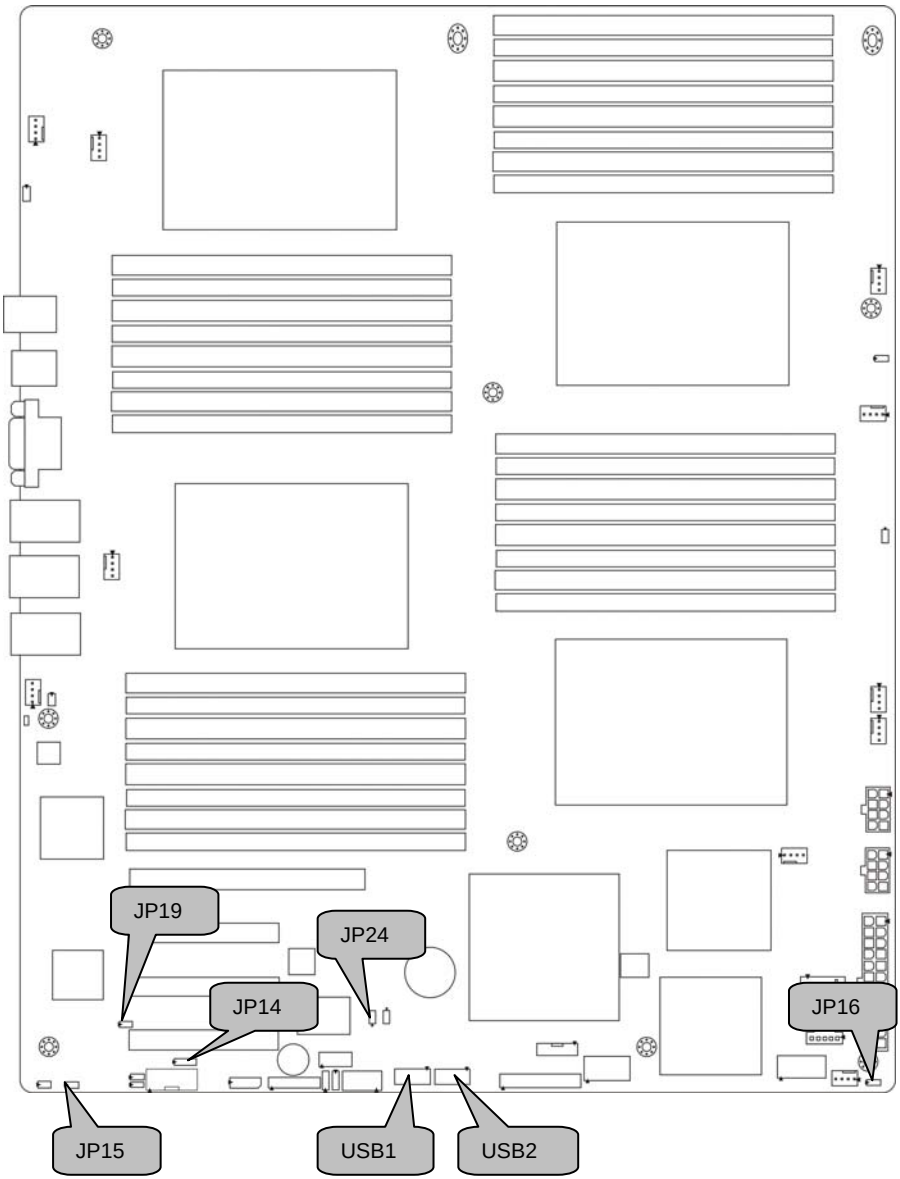
	Open: Normal (**Default**)
	Closed: BMC Disable

JP11/JP12: COM2 Switch Jumper

	Pin 1-2 Closed: SIO to COM2 (**Default**)
	Pin 2-3 Closed: BMC UART2 to COM2

JP13: TPM Disable Jumper

	Open: Enable TPM (**Default**)
	Closed: Disable TPM


JP19
JP24
JP14
JP16
JP15
USB1
USB2

JP14: COM Power Select Jumper

	Pin 1-2 Closed: VCC (**Default**)
	Pin 2-3 Closed: V5SB

JP15: WDT Trigger NMI Jumper

	Open: WDT Reset System (**Default**)
	Closed: WDT Trigger NMI

JP16: Chassis Intrusion Header

	Use this header to **trigger** the system chassis intrusion alarm.

JP19: VGA Disable Jumper

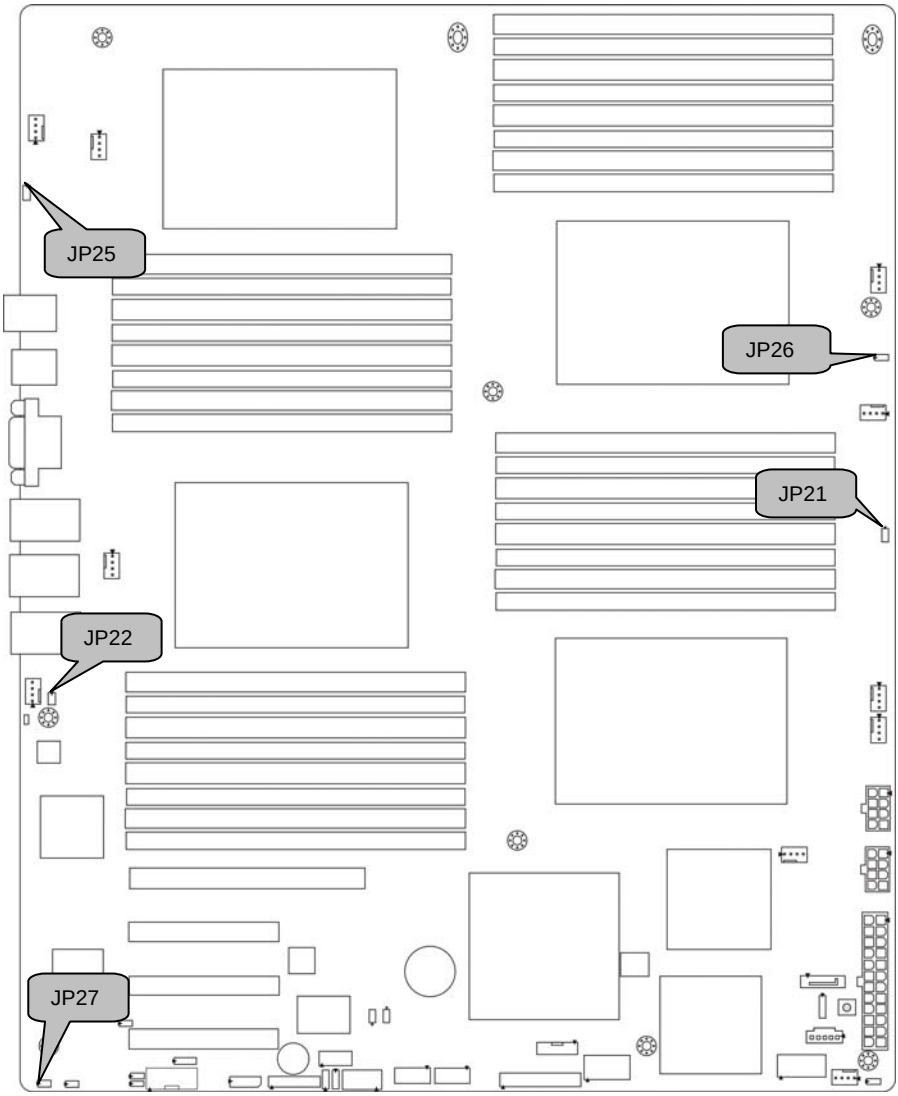
	Open: Enable VGA (**Default**)
	Closed: Disable VGA

JP24: LAN3 LED Header

	Pin	Signal
	1	LAN3 LED+
	2	LAN3 LED-

USB1/USB2: USB Front Panel Connector

	Signal	Pin	Pin	Signal
	VCC	**1**	**2**	VCC
	USB0-	**3**	**4**	USB1-
	USB0+	**5**	**6**	USB1+
	GND	**7**	**8**	GND
	KEY	**9**	**10**	NC


JP25
JP26
JP21
JP22
JP27

JP21/JP22/JP25/JP26: DDR3 VDDIO Voltage Select Jumper

	Open: Support regular 1.5V DDR3 memory (**Default**)
	Closed: Support for Low Voltage 1.35V DDR3 memory

JP27: ID LED Connector

Pin	Signal
1	ID LED+
2	GND

2.4 Installing the Processor and Heat sink

The S8812 supported AMD® processors are listed in section ***1.3 Features*** **on Page *10*** .
Check our website at **http://www.tyan.com** for latest processor support.

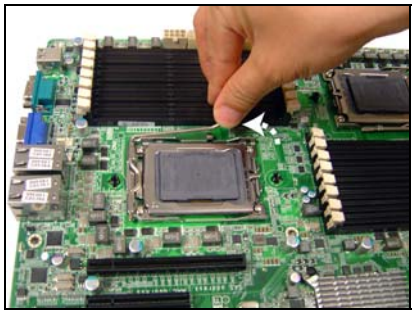
> **NOTE:** MiTAC is not liable for damage as a result of operating an unsupported configuration.

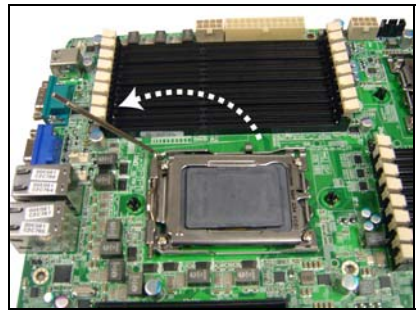
Processor Installation (G34 1944-pin Socket for AMD CPU)

Follow the steps below to install the processors and heat sinks.
Please note that the illustrations are based on a G34 1944-pin Socket which may be look exactly like the motherboard you purchased. Therefore, the illustrations should be held for your reference only.

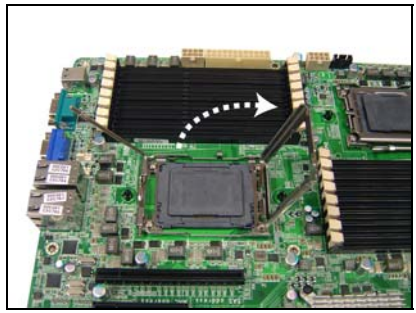
1. Locate the CPU socket.

2. Pull the CPU lever slightly away from the socket and then push it to a fully open position.

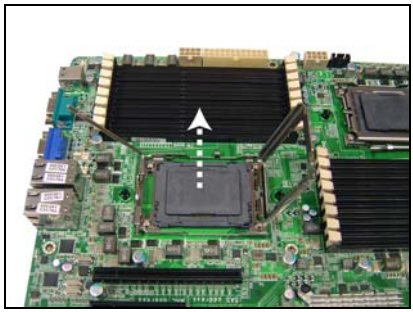


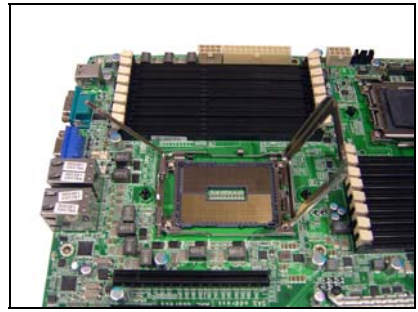


3. Lift the socket cover to a fully open position.

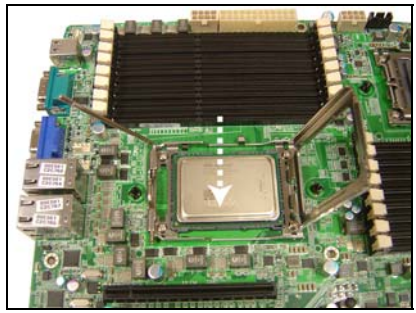


4. Take off the CPU protection cap.

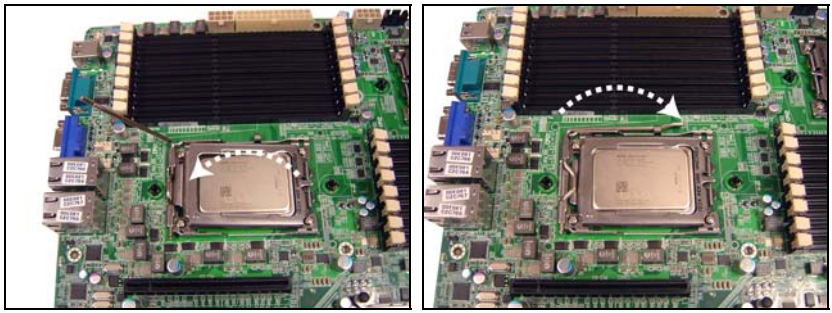




5. Place the CPU in the CPU socket.



6. Close the socket cover and press the CPU socket lever down to lock the CPU in place.



7. Repeat the same procedures to install the other CPUs.

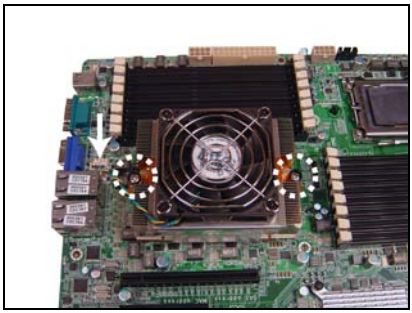
Heat sink Installation

After installing the processor, you should proceed to install the heat sink. The CPU heat sink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to the motherboard.

For the safest method of installation and information on choosing the appropriate heat sink, using heat sinks validated by AMD®. Please refer to the AMD® website: **http://www.amd.com**

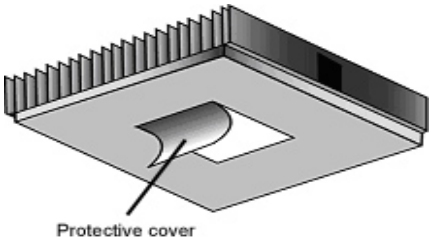
The following diagram illustrates how to install heat sink onto the CPU of S8812.

8. Place the heat sink on top of the CPU and secure it to the motherboard with 2 screws.



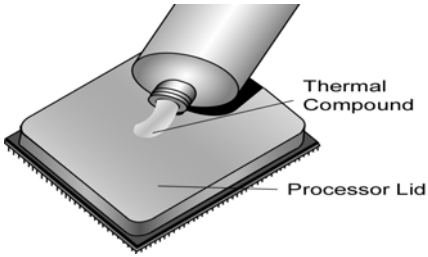
9. Connect the heat sink Fan cable to the CPU0 FAN connector J55.
10. Repeat the same procedures to install the other heat sinks (CPU1 Fan: J9, CPU2 Fan: J10, CPU3 Fan: J14).

2.5 Thermal Interface Material



There are two types of thermal interface materials designed for use with the processors.

The most common material comes as a small pad attached to the heat sink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material.
Simply remove the protective cover and place the heat sink on the processor.

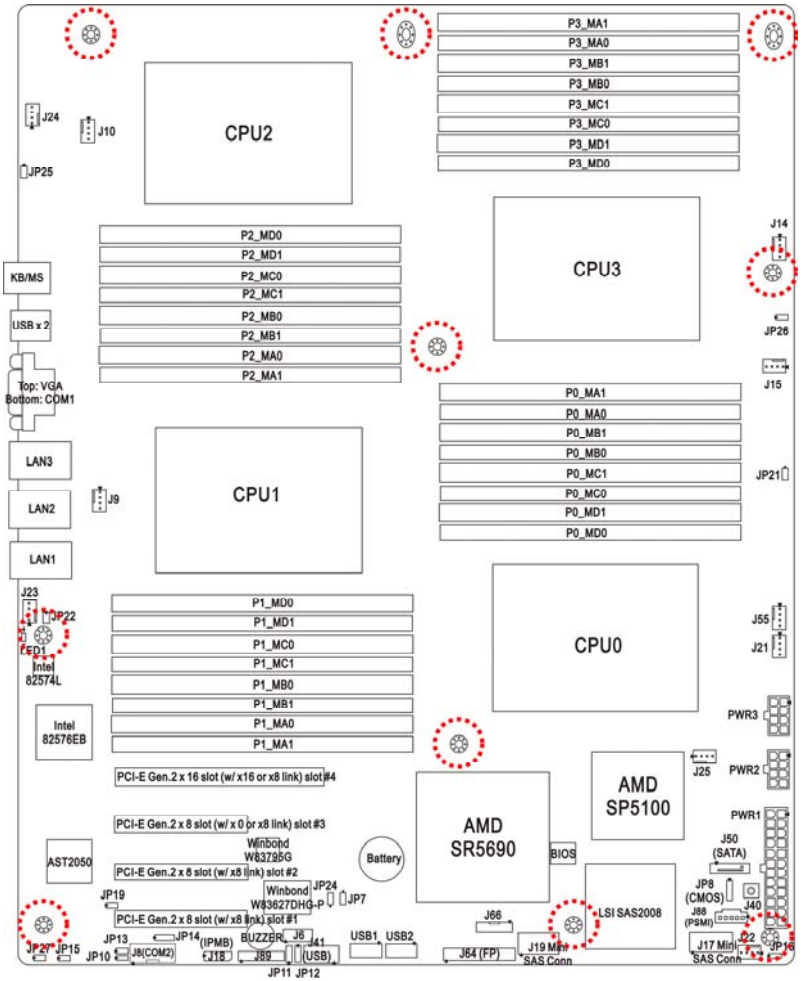


The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

NOTE: Always check with the manufacturer of the heat sink & processor to ensure that the thermal interface material is compatible with the processor and meets the manufacturer's warranty requirements.

2.6 Tips on Installing Motherboard in Chassis

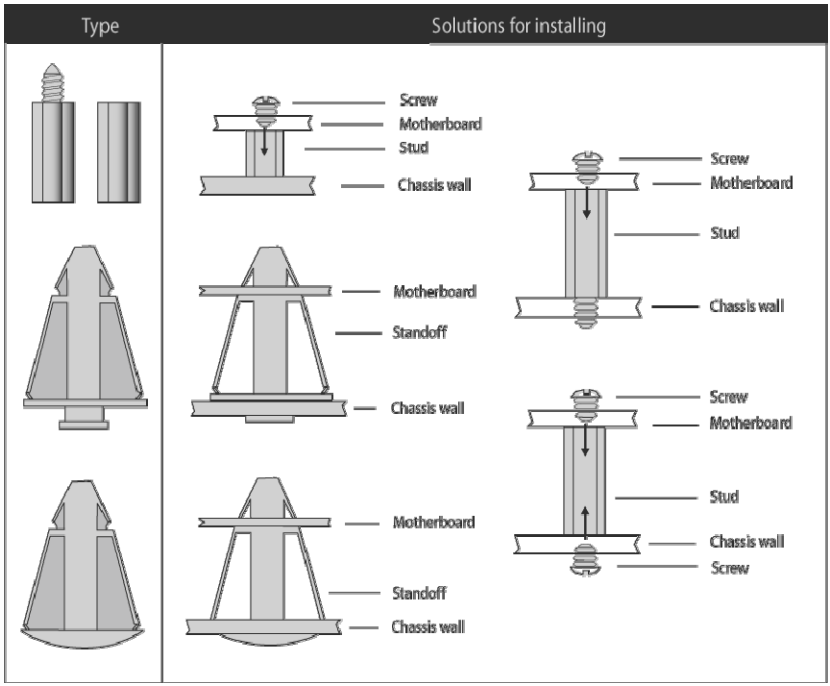
Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed.



Some chassis include plastic studs instead of metal. Although the plastic studs are usable, MiTAC recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

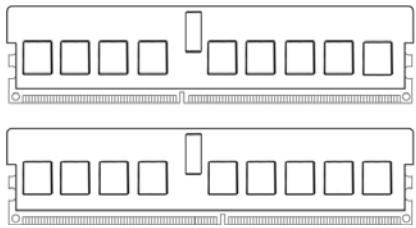
Mounting the Motherboard



2.7 Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor. Check the TYAN Web site at http://**www.tyan.com** for details of the type of memory recommended for your motherboard.

The following diagram shows common types of DDR3 memory modules.



- Supports up to 256GB total of U/RDDR3 and LV RDDR3 at 800,1066 or 1333MHz speeds
- All installed memory will automatically be detected and no jumpers or settings need changing
- All memory must be of the **same type and density**
- Always populate the memory starting from P0_DIMMA1 first

Recommended Memory Population Table

	Single CPU Installed (CPU0 only)								Dual CPU installed (CPU0 and CPU1)				Dual CPU installed (CPU0 and CPU3)			
Quantity of memory installed	**1**	**1**	**1**	**1**	**2**	**2**	**4**	**8**		**8**		**16**		**8**		**16**
P0_DIMM(1)D0								√				√				√
P0_DIMM(2)D1				√		√	√	√		√		√		√		√
P0_DIMM(3)C0								√				√				√
P0_DIMM(4)C1			√			√	√	√		√		√		√		√
P0_DIMM(5)B0								√				√				√
P0_DIMM(6)B1		√			√		√	√		√		√		√		√
P0_DIMM(7)A0								√				√				√
P0_DIMM(8)A1	√				√		√	√		√		√		√		√
P1_DIMM(9)D0												√				
P1_DIMM(10)D1										√		√				
P1_DIMM(11)C0												√				

	Single CPU Installed (CPU0 only)								Dual CPU installed (CPU0 and CPU1)				Dual CPU installed (CPU0 and CPU3)			
Quantity of memory installed	**1**	**1**	**1**	**1**	**2**	**2**	**4**	**8**		**8**		**16**		**8**		**16**
P1_DIMM(12)C1										√		√				
P1_DIMM(13)B0												√				
P1_DIMM(14)B1										√		√				
P1_DIMM(15)A0												√				
P1_DIMM(16)A1										√		√				
P2_DIMM(17)D0																
P2_DIMM(18)D1																
P2_DIMM(19)C0																
P2_DIMM(20)C1																
P2_DIMM(21)B0																
P2_DIMM(22)B1																
P2_DIMM(23)A0																
P2_DIMM(24)A1																
P3_DIMM(25)D0																√
P3_DIMM(26)D1														√		√
P3_DIMM(27)C0																√
P3_DIMM(28)C1														√		√
P3_DIMM(29)B0																√
P3_DIMM(30)B1														√		√
P3_DIMM(31)A0																√
P3_DIMM(32)A1														√		√

NOTE:

1. √ indicates a populated DIMM slot.
2. Paired memory installation for Max performance.
3. One or two or four menorys with Dual CPUs,memory install refer to Single CPU.
4. One or two or four menorys with Triple CPUs,memory install refer to Single CPU.
5. One or two or four menorys with Quad CPUs,memory install refer to Single CPU.
6. We don't suggest other memory installation.

	Triple CPU installed (CPU0 and CPU1 and CPU3)				Quad CPU installed (CPU0 and CPU1 and CPU2 and CPU3)			
Quantity of memory installed		**12**		**24**		**16**		**32**
P0_DIMM(1)D0				√				√
P0_DIMM(2)D1		√		√		√		√
P0_DIMM(3)C0				√				√
P0_DIMM(4)C1		√		√		√		√
P0_DIMM(5)B0				√				√
P0_DIMM(6)B1		√		√		√		√
P0_DIMM(7)A0				√				√
P0_DIMM(8)A1		√		√		√		√
P1_DIMM(9)D0				√				√
P1_DIMM(10)D1		√		√		√		√
P1_DIMM(11)C0				√				√
P1_DIMM(12)C1		√		√		√		√
P1_DIMM(13)B0				√				√
P1_DIMM(14)B1		√		√		√		√
P1_DIMM(15)A0				√				√
P1_DIMM(16)A1		√		√		√		√
P2_DIMM(17)D0								√
P2_DIMM(18)D1						√		√
P2_DIMM(19)C0								√
P2_DIMM(20)C1						√		√
P2_DIMM(21)B0								√
P2_DIMM(22)B1						√		√
P2_DIMM(23)A0								√
P2_DIMM(24)A1						√		√
P3_DIMM(25)D0				√				√
P3_DIMM(26)D1		√		√		√		√
P3_DIMM(27)C0				√				√

	Triple CPU installed (CPU0 and CPU1 and CPU3)				Quad CPU installed (CPU0 and CPU1 and CPU2 and CPU3)			
P3_DIMM(28)C1		√		√		√		√
P3_DIMM(29)B0				√				√
P3_DIMM(30)B1		√		√		√		√
P3_DIMM(31)A0				√				√
P3_DIMM(32)A1		√		√		√		√

NOTE:

1. √ indicates a populated DIMM slot.
2. Paired memory installation for Max performance.
3. One or two or four menorys with Dual CPUs,memory install refer to Single CPU.
4. One or two or four menorys with Triple CPUs,memory install refer to Single CPU.
5. One or two or four menorys with Quad CPUs,memory install refer to Single CPU.
6. We don't suggest other memory installation.

U-DIMM Module Support

DDR3 Speed/Voltage		DDR3 Rank Configuration	
1.35v	1.5v	DIMM0 (A0, B0, C0, D0)	DIMM1 (A1, B1, C1, D1)
800MHz	800MHz		SR and DR
800MHz	800MHz	SR and DR	SR and DR
1066MHz	1066MHz		SR and DR
1066MHz	1066MHz	SR and DR	SR and DR
n/a	1333MHz		SR and DR
n/a	1333MHz	SR and DR	SR and DR

Notes:

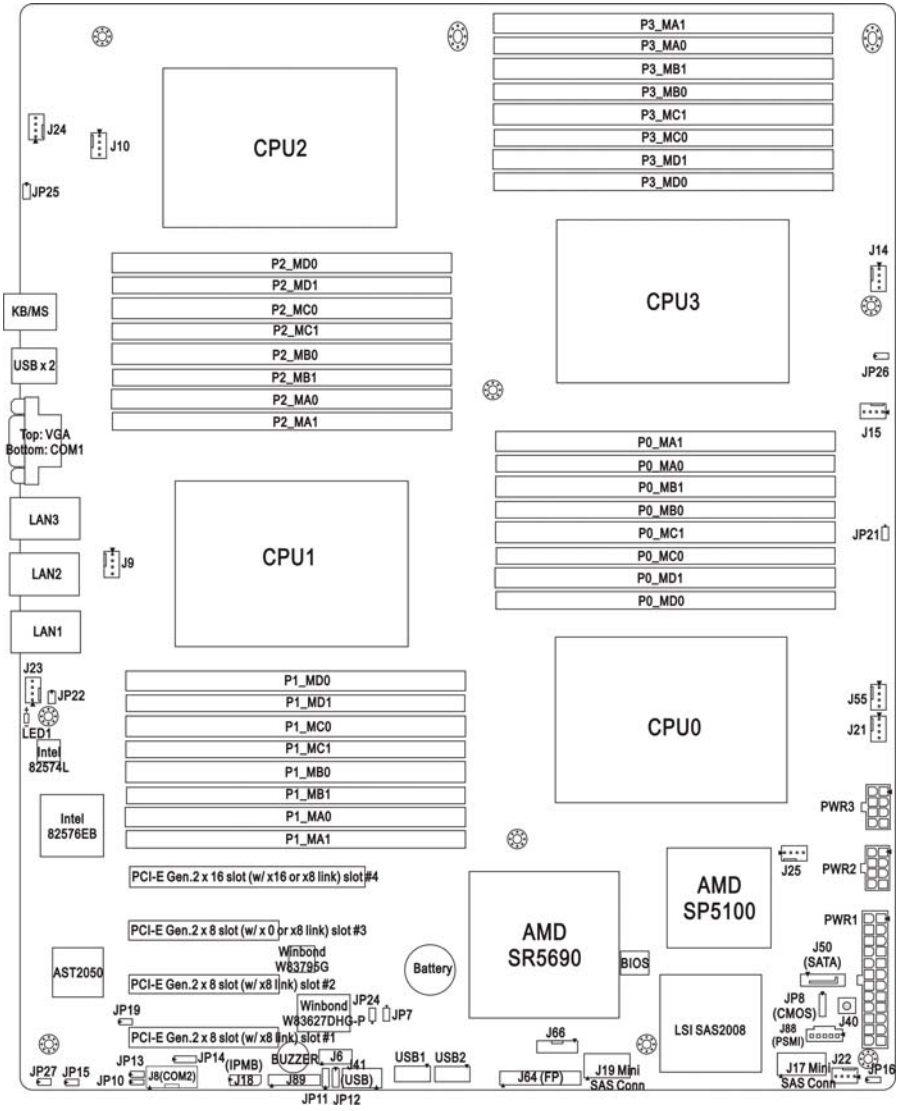
- UDIMM can support up to 4GB sized DIMM's
- Maximum of 8GB per channel
- SR and DR UDDR3 module support **only**
- SR and DR 1.35v Memory MAX speed of 1066MHz in a dual channel configuration
- SR and DR 1.5v Memory MAX speed of 1333MHz in a dual channel configuration

R-DIMM Module Support

DDR3 Speed/Voltage		DDR3 Rank Configuration	
1.35v	1.5v	DIMM0 (A0, B0, C0, D0)	DIMM1 (A1, B1, C1, D1)
800MHz	800MHz	n/a	SR and DR
800MHz	800MHz	n/a	QR
800MHz	800MHz	SR, DR and QR	SR, DR and QR
1066MHz	1066MHz	n/a	SR and DR
1066MHz	1066MHz	n/a	QR
1066MHz	1066MHz	SR and DR	SR and DR
n/a	1066MHz	QR	SR, DR and QR
n/a	1066MHz	SR, DR and QR	QR
n/a	1333MHz	n/a	SR and DR
n/a	1333MHz	n/a	QR
n/a	1333MHz	SR and DR	SR and DR

Notes:

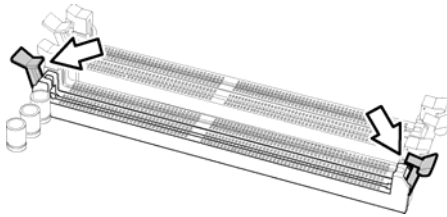
- RDIMM can support up to 16GB sized DIMM's
- SR and DR Memory has a MAX amount of 16GB per channel
- SR and DR 1.35v Memory MAX speed of 1066MHz in a dual channel configuration
- SR and DR 1.5v Memory MAX speed of 1333MHz in a dual channel configuration
- QR Memory has a MAX amount of 32GB per channel
- QR 1.35v Memory MAX speed of 800MHz in a dual channel configuration
- QR 1.5v Memory MAX speed of 1066MHz in a dual channel configuration


P3_MA1
P3_MA0
P3_MB1
P3_MB0
P3_MC1
P3_MC0
P3_MD1
P3_MD0
CPU2
J24
J10
JP25
P2_MD0
P2_MD1
P2_MC0
P2_MC1
P2_MB0
P2_MB1
P2_MA0
P2_MA1
CPU3
J14
JP26
J15
KB/MS
USB x 2
Top: VGA
Bottom: COM1
LAN3
LAN2
LAN1
J9
P0_MA1
P0_MA0
P0_MB1
P0_MB0
P0_MC1
P0_MC0
P0_MD1
P0_MD0
JP21
CPU1
J23
JP22
LED1
Intel
82574L
P1_MD0
P1_MD1
P1_MC0
P1_MC1
P1_MB0
P1_MB1
P1_MA0
P1_MA1
CPU0
J55
J21
Intel
82576EB
PWR3
PWR2
J25
PCI-E Gen.2 x 16 slot (w/ x16 or x8 link) slot #4
AMD
SP5100
PWR1
PCI-E Gen.2 x 8 slot (w/ x 0 or x8 link) slot #3
AMD
SR5690
J50
(SATA)
AST2050
Winbond
W83795G
Battery
BIOS
PCI-E Gen.2 x 8 slot (w/ x8 link) slot #2
JP8
(CMOS)
JP24
JP19
Winbond
W83627DHG-P
JP7
J88
(PSMI)
J40
LSI SAS2008
PCI-E Gen.2 x 8 slot (w/ x8 link) slot #1
J66
JP27
JP15
JP13
JP14
(IPMB)
BUZZER
J6
USB1
USB2
J19 Mini
SAS Conn
J22
JP16
JP10
J8(COM2)
J18
J89
J41
(USB)
J64 (FP)
J17 Mini
SAS Conn
JP11
JP12

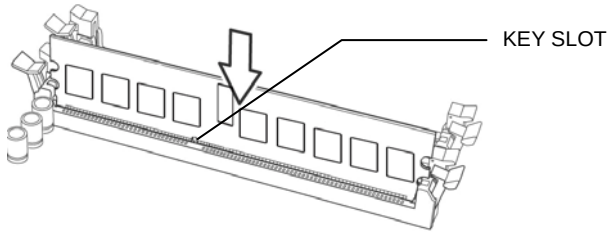
Memory Installation Procedure

Follow these instructions to install memory modules into the S8812.

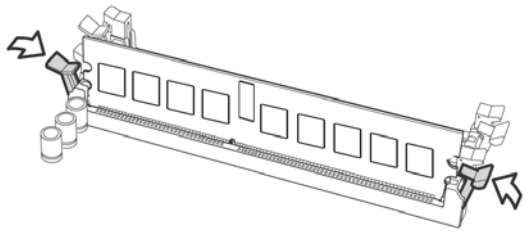
1. Press the locking levers in the direction shown in the following illustration.



2. Align the memory module with the socket. The memory module is keyed to fit only one way in the socket.



3. Seat the module firmly into the socket by gently pressing down until it sits flush with the socket. The locking levers pop up into place.

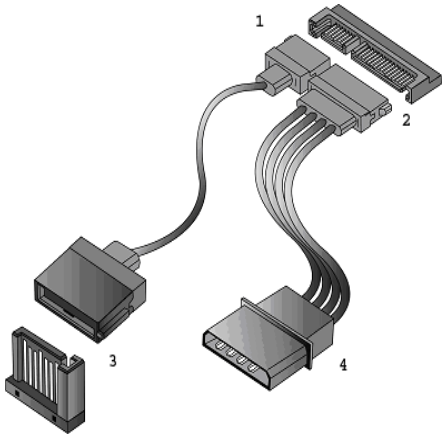


2.8 Attaching Drive Cables

Attaching Serial ATA Cables

S8812 is equipped with 1 Serial ATA (SATA) channel. Connections for the drives are very simple.
There is no need to set Master/Slave jumpers on SATA drives.
If you are in need of SATA/SAS cables or power adapters please contact your place of purchase.

The following pictures illustrate how to connect an SATA drive.

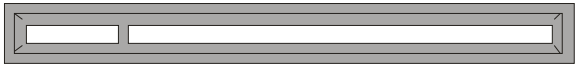


1. SATA drive cable connection
2. SATA drive power connection
3. SATA cable motherboard connector
4. SATA drive power adapter

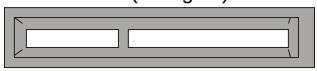
2.9 Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the slots that may appear on your motherboard.

PCI-E Gen. 2 x 16 slot (x16 signal)



PCI-E x8 slot (x8 signal)



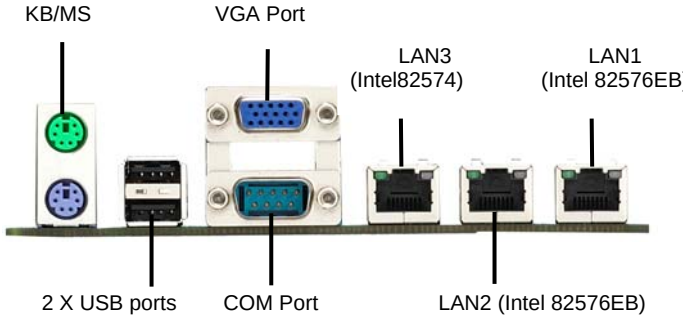
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

TIP: It's a good practice to install add-in cards in a staggered manner rather than making them directly adjacent to each other. Doing so allows air to circulate within the chassis more easily, thus improving cooling for all installed devices.

NOTE: You must always unplug the power connector to the motherboard before performing system hardware changes to avoid damaging the board or expansion device.

2.10 Connecting External Devices

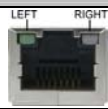
Connecting external devices to the motherboard is an easy task. The motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.



NOTE: Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

Onboard LAN LED Color Definition

The two onboard Ethernet ports have green and yellow LEDs to indicate LAN status. The chart below illustrates the different LED states.

10/100/1000 Mbps LAN Link/Activity LED Scheme			
		**Left LED**	**Right LED**
10 Mbps	**Link**	Green	Off
	Active	Blinking Green	Off
100 Mbps	**Link**	Green	Green
	Active	Blinking Green	Green
1000 Mbps	**Link**	Green	Yellow
	Active	Blinking Green	Yellow
No Link		Off	Off

2.11 Installing the Power Supply

There are three power connectors on your S8812. It is required that you have an EPS12V power supply which has one 24-pin and two 8-pin connectors.

- 24-pin (PWR1)

Signal	Pin	Pin	Signal
+3.3V	1	13	+3.3V
+3.3V	2	14	-12V
GND	3	15	GND
+5V	4	16	PS_ON
GND	5	17	GND
+5V	6	18	GND
+12V	7	19	GND
Power OK	8	20	RES
5VSB	9	21	+5V
+12V	10	22	+5V
+12V	11	23	+5V
+3.3V	12	24	GND

- 8-pin (PWR2, PWR3)

Signal	Pin	Pin	Signal
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

NOTE: Please be aware that ATX 2.x, ATX12V and ATXGES power supplies may **not** be compatible with the board and can damage the motherboard and/or CPU(s).

Applying power to the board:

- Connect the EPS12V 8-pin power connectors. Both PW2 and PW3 are for CPU loading. With light load processors, such as HE model, one 8-pin connector is OK. With SE model processors, both 8-pin power connectors are required.
- Connect the EPS/12V 24-pin power connector.
- Connect power cable to power supply and power outlet.

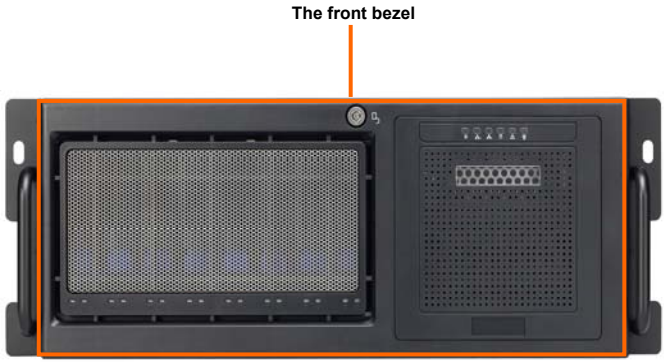
NOTE: You must unplug the power supply before plugging the power cables to motherboard connectors.

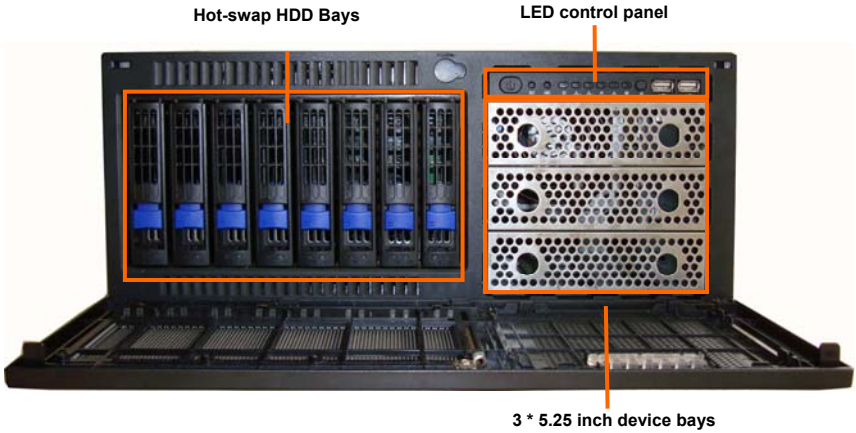
2.12 Finishing Up

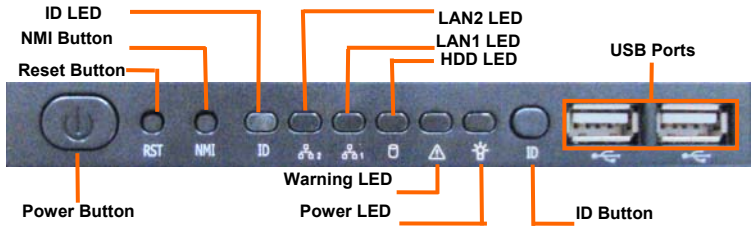
Congratulations on making it this far! You have finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially IDE cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.
In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

The following views show you the product.

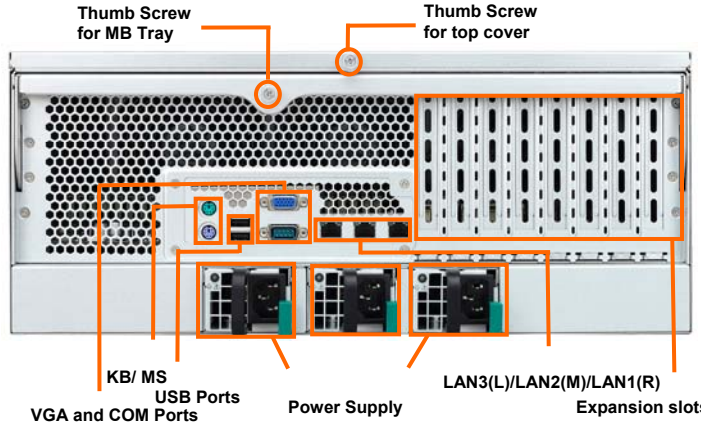
3.1.1 System Front View







3.1.2 System Rear View



3.1.3 LED Definitions

Front Panel

LED	State	Description
Power LED	Green	Power on
ID LED	Blue	ID LED
LAN1/LAN2 Activity	Green	Link
	Green (Blinking)	Activity
HDD LED	Amber (Blinking)	Activity
Warning LED	Green	Normal Status
	Red	System Failed.fan, voltage, thermal Failed.

ID LED

LED	State	Color	Description
ID LED	On	Blue	System identified
	Off	Off	System not identified

Note: Press ID button when the system is AC (Alternating Current) on, then ID LED will show the system is identified with emitting blue light. Users from remote site could also activate ID LED by input a few commands in IPMI, detailed software support please visit http://www.tyan.com for lastest AST2050 user guide.

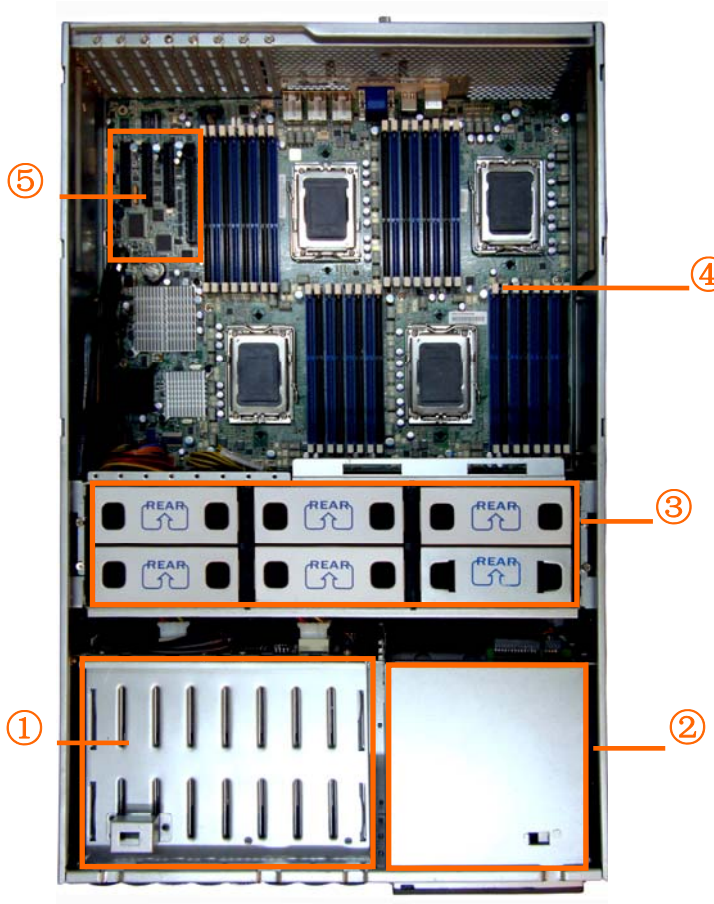
HDD LED

State		
Activity LED	**Fault LED**	**Description**
On	Off	Drive present,no activity
Green (Blinking)	Off	Drive present,with activity
Off	Red	HDD Fail
Blink	Red (Blinking 4 Hz)	Identify
Blink	Red (Blinking 1 Hz)	Rebuild

Rear I/O

The three onboard Ethernet ports have green and yellow LEDs to indicate LAN status. The rear I/O LED Please refer to *Chapter 2.10 Connecting External Devices* Onboard LAN LED Color Definition on page 45.

3.1.4 Internal View



①	(8) HDD trays with (2) M1237F48 SAS backplane (Pre-installed)
②	M1018 Front Panel Board and (3) 5.25 inch media bays
③	System Fan Module (6) 12038 hot-swap fan as pre-installed
④	System Main Board
⑤	(4) Expansion slots

Chapter 4: Setting Up

4.0.1 Before you Begin

This chapter explains how to install the CPUs, CPU heatsinks, memory modules, and hard drives. Instructions on inserting add on
cards are also given.

4.0.2 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

4.0.3 Tools

The following procedures require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconne-
-cted with your hands. It is recommended that you do not use pliers to remove connectors as it may damage the soft metal or plastic parts of the connectors.

4.0.4 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to FT48-B8812 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.

- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.

- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.

- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.

- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

Note:

All connectors are keyed to only attach one way.

All use the correct screw size as indicated in the procedures.

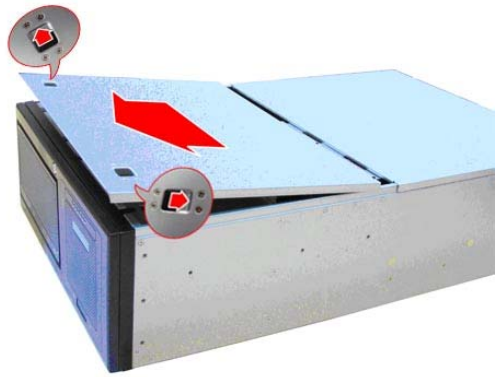
4.1 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPUs, memory modules and add on cards.

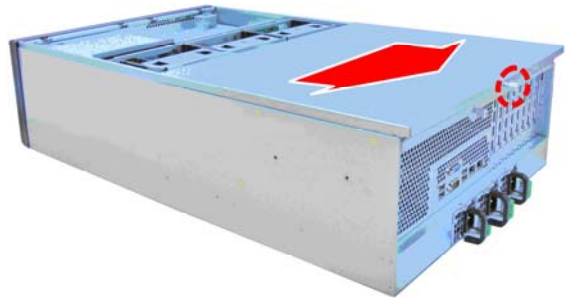
4.1.1 Removing the Chassis Cover

Follow these instructions to remove FT48-B8812 chassis cover.

1. Press the button on the front top cover and slide the cover off.



2. Unscrew the thumb screw securing the rear cover then slide the rear top cover off.



Note:

Installing the CPU and heatsink ,please refer to *Chapter 2.4*. Installing the Memory,please refer to *Chapter 2.7*.

4.1.2 Installing the PCI-E Cards

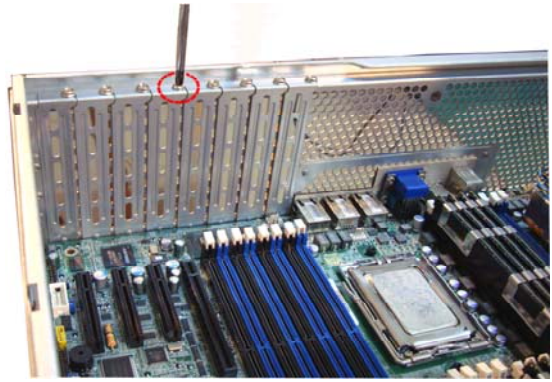
FT48-B8812 has **four** PCI-E expansion slots.
Slot1 and Slot2 has x8 PCI-E signal for each slot.Slot3,Slot4 share one x16 PCI-E signal. Slot3 has higher-priority, if Slot 3 has installed PCI-E Card, Slot3 will share Slot4 PCI-E signal, both of them were x8 PCI-E signal

For detail information, please see follow PCI-E Configuration table.

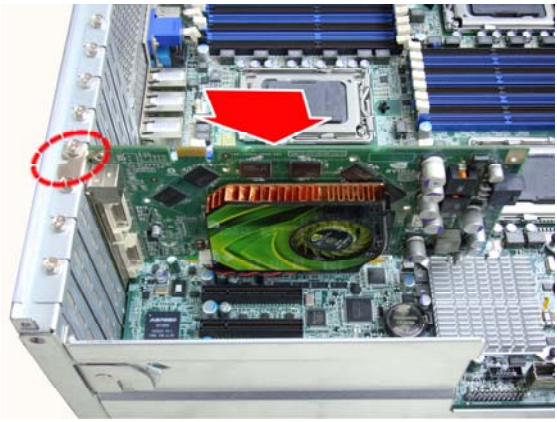
PCI-E Slot 3 (x8)		PCI-E Slot 4 (x16)		JP7
Card	**Inner Signal**	**Card**	**Inner Signal**	**Status**
Install	X8	X	X8	X
Not Install	NC	X	X16	**Open**
Not Install	X8	X	X8	Close

Those PCI-E Slot can support GPU (Graphic Processing Unit) card, SAS card, Ethernet card and etc . Follow these instructions was the example to install expansion GPU cards.

1. Locate the expansion slot on the motherboard, unscrew the bracket from the slot you want to use.



2. Take the brackets out from the slot, insert the card into the slot and secure it with the screws you removed from the bracket.

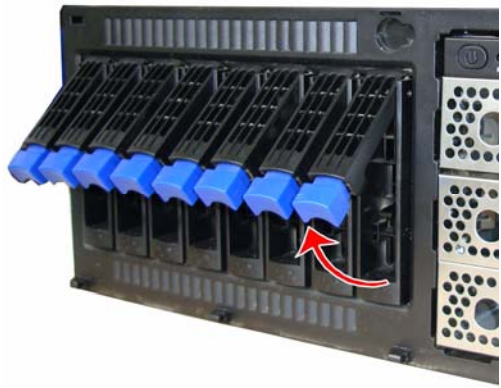


3. Connect the cables between the expansion card and the power distribution board, the connectors you use should match with the slot you add the card with, one GPU power cable (CCBL-1100) was designed for supporting two GPU cards(each 8 pin power connector per GPU card).

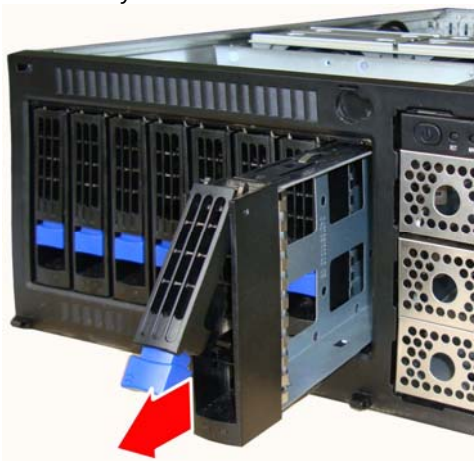
4.2 Installing Hard Drives

The FT48-B8812 supports up to eight 3.5” hard drives. Follow these instructions to install a hard drive.

1. Press the locking lever latch and pull the locking lever open.



2. Slide the HDD tray out.



3. Place a hard drive into the HDD tray.

4. Turn over the HDD unit and secure the HDD using 4 HDD screws.

5. Reinsert the HDD tray into the chassis and press the locking lever to secure the tray.

4.3 Rack Mounting

After installing the necessary components, FT48-B8812 can be mounted in a rack using the supplied rack mounting kit.

Rack mounting kit

Rail with Bracket x 2

Mounting Ears x 2

Screw Sack x 1

4.3.1 Installing the Server in a Rack

Follow these instructions to mount the FT48-B8812 into an industry standard 19" rack.

Note:

Before mounting FT48-B8812 in a rack, be sure that all internal components have been installed and the unit has been fully tested. Maintenance can be performed on the unit while in a rack but it is preferable to install the device in a fully operational condition.

Screw Sack

Including:

A: Bracket for M6 screw--10 pcs

B: M 6--10 pcs

C: M 4-L5--16 pcs

A **B** **C**

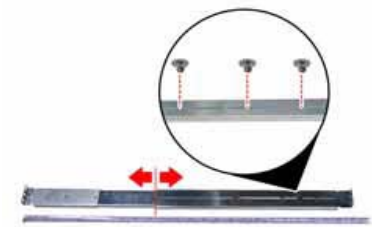
Installing the Inner Rails to the Unit

Step1: Screw the mounting ears to each side of the FT48-B8812 as shown using three M4-L5 screws (C) from the supplied screws kit.

Step2: Draw out the inner rails from each rail assembly. Install the inner sliding rails to each side of the server using five M4-L5 screws (C).

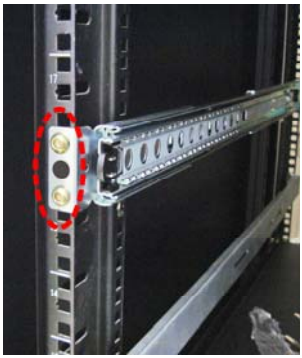
Installing the Outer Rails to the Unit

Step1: Adjust the outer rails to fit the length of the rack. The sliding brackets have long slits to allow them to be fixed to the other part of the rails in various positions.



Step2:

Secure the outer rails to the rack using four M6 screws (B) for each side. Secure the mounting brackets from outside, not inside, of the rack.



Rack Mounting the Server

Step1: Draw out the middle rail to the latch position.

Step2: Lift the unit and then insert the inner slide rails into the middle rails.

Step3: Press the latch key and push the whole system in.

Step4: Secure the mounting ears of the unit to the rack using two small brackets (A) and M6 screws (B).

4.4 Opening the Chassis Front Bezel

1. Insert the front bezel key (packed in a bag in the accessory box) and rotate the key 90 degrees counterclockwise to unlock the front bezel.

2. Open the front bezel.

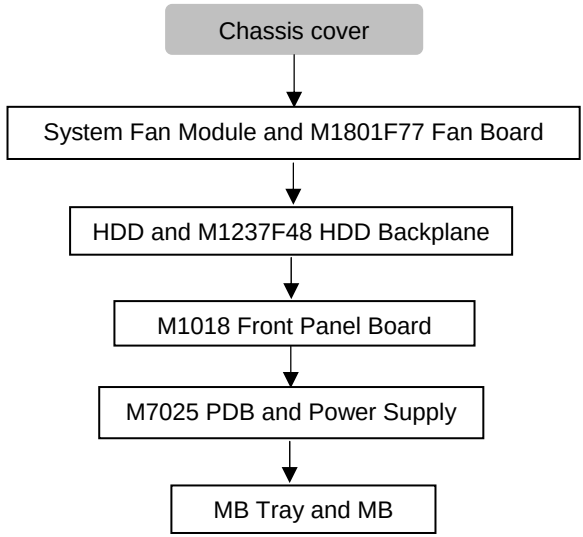
Chapter 5: Replacing Pre-Installed Components

5.1 Introduction

This chapter explains how to replace the pre-installed components, including the Motherboard, M1018 Front Panel Board, M1237F48 HDD Backplane, M1801F77 Fan Board, System fan, ODD drive, Power supply unit etc.

5.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.


Chassis cover
System Fan Module and M1801F77 Fan Board
HDD and M1237F48 HDD Backplane
M1018 Front Panel Board
M7025 PDB and Power Supply
MB Tray and MB

5.3 Removing the Cover

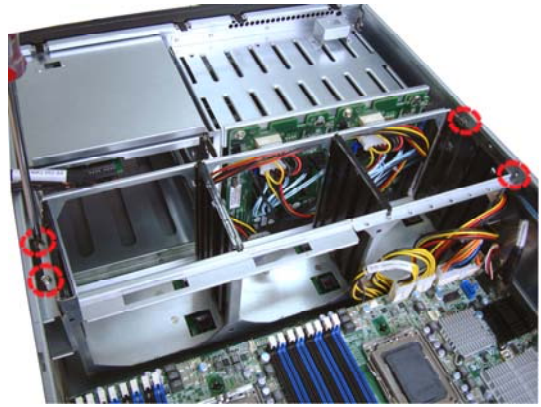
Before replacing any parts you must remove the chassis cover. Follow **Chapter 2.1.1** to remove the cover of the FT48-B8812.

5.4 Replacing the System Fan and Fan Board

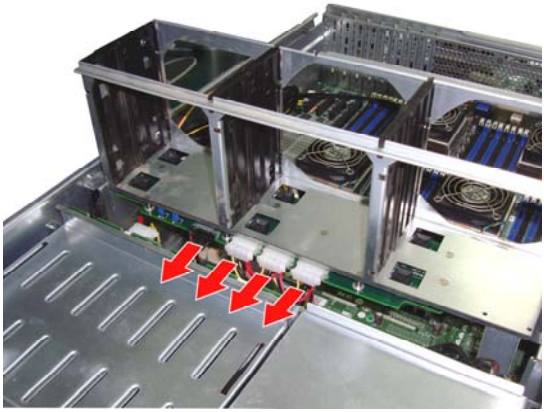
Follow these instructions to replace the cooling fans in your system.

1. Refer to Chapter 1.6.7 “internal view” and locate the cooling fans in your system.
2. Unplug the installed single system fans in the fan module.

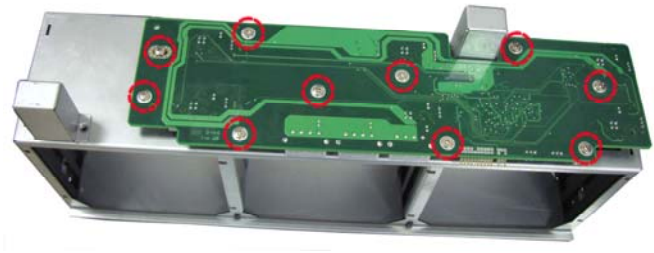
3. Unscrew the fan holder and lift it up from the chassis.



4. Unplug the cables connected to the fan board and turn over the fan holder.

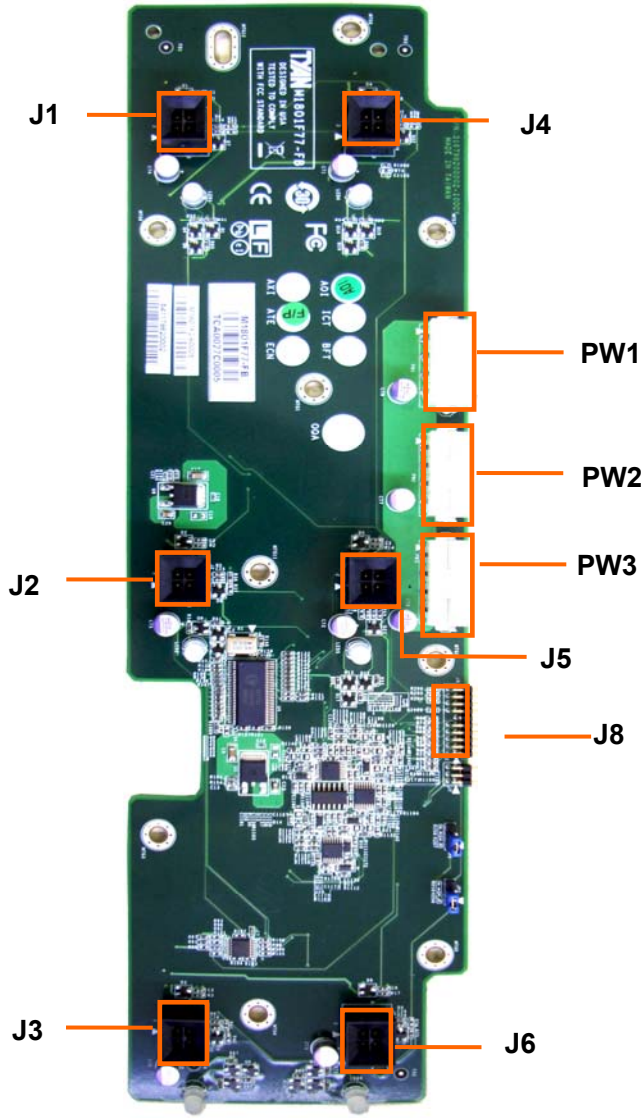


5. Remove the 10 screws and disassemble the fan board from the fan holder.



6. Renew the fan board if it is necessary and assemble the fan module back follow the steps above in reverse.

5.4.1 M1801F77 Fan Board Features

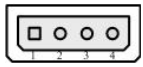


5.4.2 M1801F77 Fan Board Connector Pin Definition

J1~J6: 4 pin Fan connector

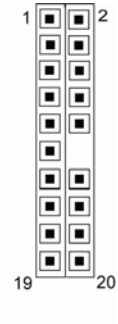
Definition	Pin	Pin	Definition
GND	1	2	VDD+12V
CLOCK	3	4	PWM

PW1/PW2/PW3: Big 4 pin Power connector



Definition	Pin	Pin	Definition
VDD+12V	1	2	GND
GND	3	4	VCC+5V

J8: fan control header

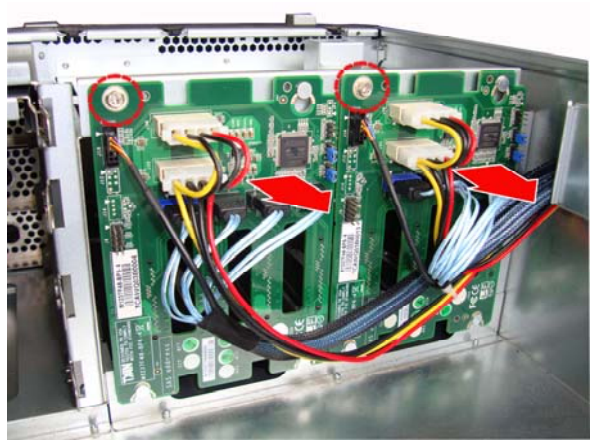


Definition	Pin	Pin	Definition
TACH1	1	2	TACH6
TACH2	3	4	NC
TACH3	5	6	NC
TACH4	7	8	NC
TACH5	9	10	NC
GND	11	12	KEY
PWM1	13	14	PWM2
NC	15	16	NC
NC	17	18	NC
NC	19	20	PWM3

5.5 Replacing M1237F48 SATA/SAS Backplane

To replace the SAS/SATA backplane, you need to remove all the fans and the fan holder first. Refer to the steps given in ***Chapter 3.4***, then, follow these instructions to replace SATA/SAS backplane.

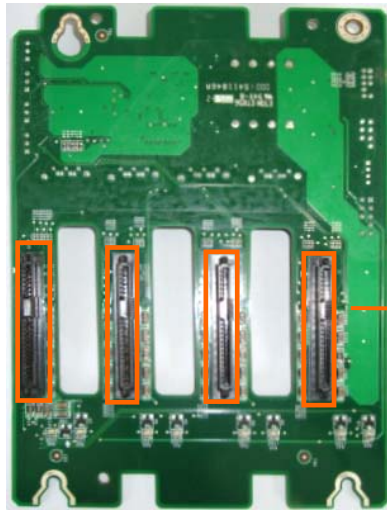
1. Remove the HDD trays corresponding to the SAS/SATA backplane to be replaced from the FT48-B8812.
2. Disconnect all cables from the M1237F48 to be replaced and remove the screw securing it.



3. Renew the backplane and secure it following the steps above in reverse.

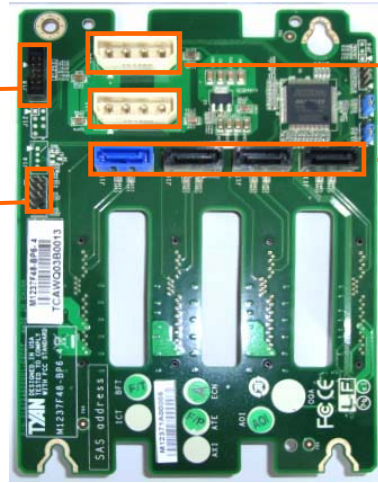
5.5.1 M1237F48 SATA/SAS Backplane Features

Front view:



Right to Left : J1/J2/J4/J5
29 Pin SAS Connector

Rear view:



J18
SGPIO
header

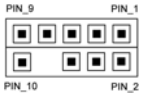
J6
burning FW
header

Up to Down:
J36/J35
Big 4 pin Power
Connector

Right to Left:
J15/J16/J17/J13
Secondary port
connector
(SAS Only)

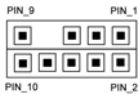
5.5.2 M1237F48 Connector Pin Definition

J6: burning FW header



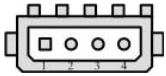
Definition	Pin	Pin	Definition
CPLD_JTAG_TCK	1	2	GND
CPLD_JTAG_TDO	3	4	VDD_3P3_RUN
CPLD_JTAG_TMS	5	6	dummy pin
dummy pin	7	8	key pin
CPLD_JTAG_TDI	9	10	GND

J18: SGPIO header



Definition	Pin	Pin	Definition
FPIO_SCL	1	2	SDATAIN
FPIO_SDA	3	4	SDATAOUT
GND	5	6	SAS_SIO_END_A
Key pin	7	8	SAS_SIO_CLK_A
dummy pin	9	10	HD_ERR_LED

J35/J36: Big 4 pin Power connector



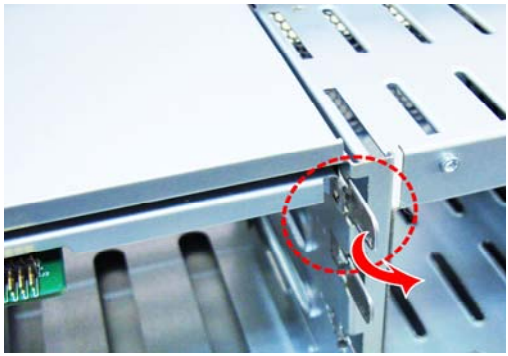
Definition	Pin	Pin	Definition
VDD+12V	1	2	GND
GND	3	4	VCC+5V

5.6 Replacing the Front Panel Control Board

Follow these instructions to replace the M1018 LED control board.

1. Disconnect the power cable and data cable from M1018.

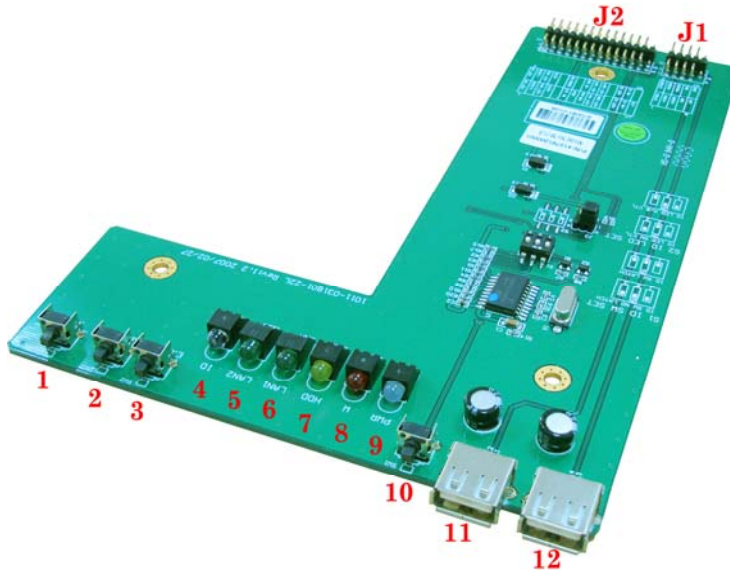
2. Push aside the latch and slide the LED control board unit out of the chassis.



3. Remove three screws securing the LED control board to the bracket.

4. Lift the LED control board free from the chassis. After replacement, insert the unit into the chassis following the above procedures in reverse.

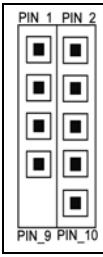
5.6.1 M1018 LED Control Board Features



1	Power Switch	**8**	Warning LED
2	Reset Switch	**9**	Power LED
3	NMI Switch	**10**	ID Switch
4	ID LED	**11**	USB 2
5	LAN2 LED	**12**	USB 1
6	LAN1 LED	**J2**	2x14 pin header
7	HDD LED	**J1**	2x5 pin USB header

5.6.2 M1018 LED Control Board Connector Pin Definition

J1: 2x5 pin USB header



Definition	Pin	Pin	Definition
VCC+5V	1	2	VCC+5V
USB1-	3	4	USB0-
USB1+	5	6	USB0+
GND	7	8	GND
Key	9	10	GND

J2: 2x14 pin header

Definition	Pin	Pin	Definition
HD_LED+	1	2	HD_LED-
RESET+	3	4	RESET-
Power LED+	5	6	Power LED-
WLED+	7	8	WLED-
Reserved	9	10	Reserved
EXT INT	11	12	Voltages
V5SB	13	14	Reserved
Power SW+	15	16	Power SW-
LAN1 LED+	17	18	LAN1 LED+
LAN2 LED+	19	20	LAN2 LED+
Reserved	21	22	Reserved
ID LED-IN+	23	24	ID LED-IN-
ID SW+	25	26	ID SW-
KEY	27	28	Reserved

5.7 Replacing Power Supply and M7025 PDB

5.7.1 Replacing Power Supply

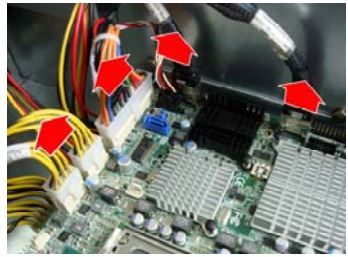
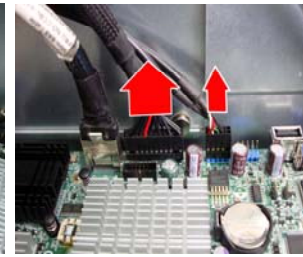
You need to disconnect the power supply first before replacing the power distribution board.

1. Press the blue button on the power supply and slide it out.

2. After replacement, insert the power supply into the chassis following the above procedures in reverse.

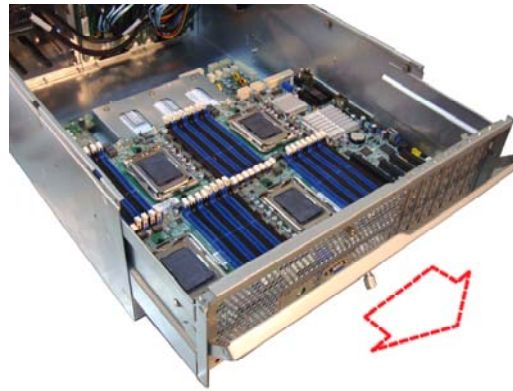
5.7.2 Replacing M7025 Power Distribution Board

1. Disconnect the cables on the M7025 PDB and motherboard.
   Power cables, SAS cable, front panel cable:

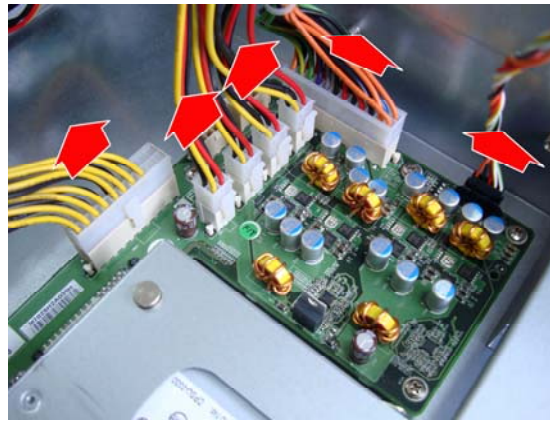



2. Thumb the screw securing the motherboard tray, pull down the bar.

3. Slide the motherboard tray out carefully.

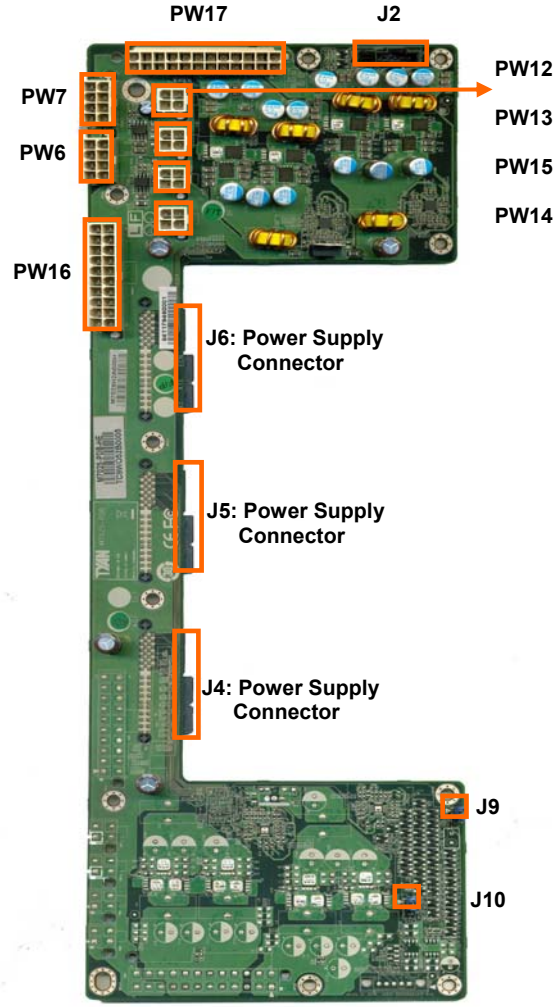


4. Disconnect the cables on the PDB.



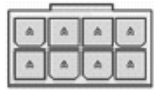
5. Locate the 12 screws on the PDB, then you can renew the board and fix it back follow the steps above in reverse.

5.7.3 M7025 Power Distribution Board Features



5.7.4 M7025 PDB Connector Pin Definition

PW6/7: 2×4 Pin Power Connector

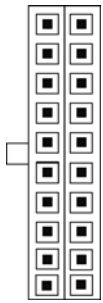


Definition	Pin	Pin	Definition
GND	1	2	GND
GND	3	4	GND
+12V	5	6	+12V
+12V	7	8	+12V

PW12/13/14/15: 2×2 Pin Power Connector for Fan board / HDD backplane

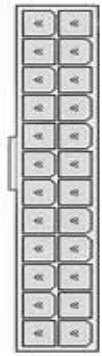
Definition	Pin	Pin	Definition
GND	1	2	GND
+12V	3	4	+5V

PW16: 2×10 Pin Power Connector



Definition	Pin	Pin	Definition
GND	1	2	GND
GND	3	4	GND
GND	5	6	GND
GND	7	8	GND
GND	9	10	GND
+12V	11	12	+12V
+12V	13	14	+12V
+12V	15	16	+12V
+12V	17	18	+12V
+12V	19	20	+12V

PW17: 2×12 Pin Power Connector



Definition	Pin	Pin	Definition
+3.3V	1	2	+3.3V
GND	3	4	+5V
GND	5	6	+5V
GND	7	8	PWR Good
5VSB	9	10	+12V
+12V	11	12	+3.3V
+3.3V	13	14	-12V
GND	15	16	PS_ON
GND	17	18	GND
GND	19	20	Reset
+5V	21	22	+5V
+5V	23	24	GND

J2: PSMI Header

Pin	Definition
1	SMBCLK
2	SMBDAT
3	SMB_ALERT
4	GND
5	VDD3.3V

J9:

Pin	Definition
1	GND
2	5VSB
3	RSVD

Note: Connect pin1-pin2 for PSU 2+0 or 2+1;
Connect pin2-pin3 for PSU 1+0 or 1+1;
Default: connect pin1-pin2 for PSU 2+0 or 2+1.

J10:

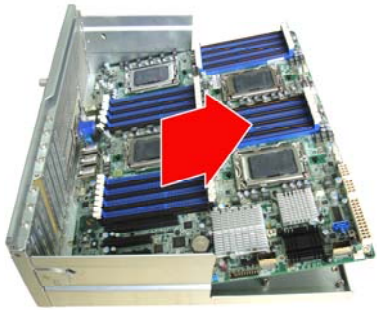
Pin	Definition
1	RSVD
2	PSON_EN
3	GND

Default: Connect J10 pin1-pin2

5.8 Replacing S8812 System Board

1. Followed ***Chapter 3.7.2*** to set the mother board tray free.

2. Unscrew the motherboard and carefully lift it up from the MB tray.



3. Renew the board and fix it back follow the steps above in reverse.

Chapter 6: BIOS Setup

6.1 About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:

1. Turn on or reboot your system.
2. Press <Del> during POST (F4 on remote console) to start the BIOS setup utility.

6.1.1 Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
Tab	Moves from one selection to the next
Left/Right Arrow Keys	Changes from one menu to the next
Up/Down Arrow Keys	Moves between selections
Enter	Opens highlighted section
PgUp/PgDn Keys	Changes settings.

6.1.2 Getting Help

Pressing [**F1**] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**] or the [**F1**] key again.

6.1.3 In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.

The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by MiTAC or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

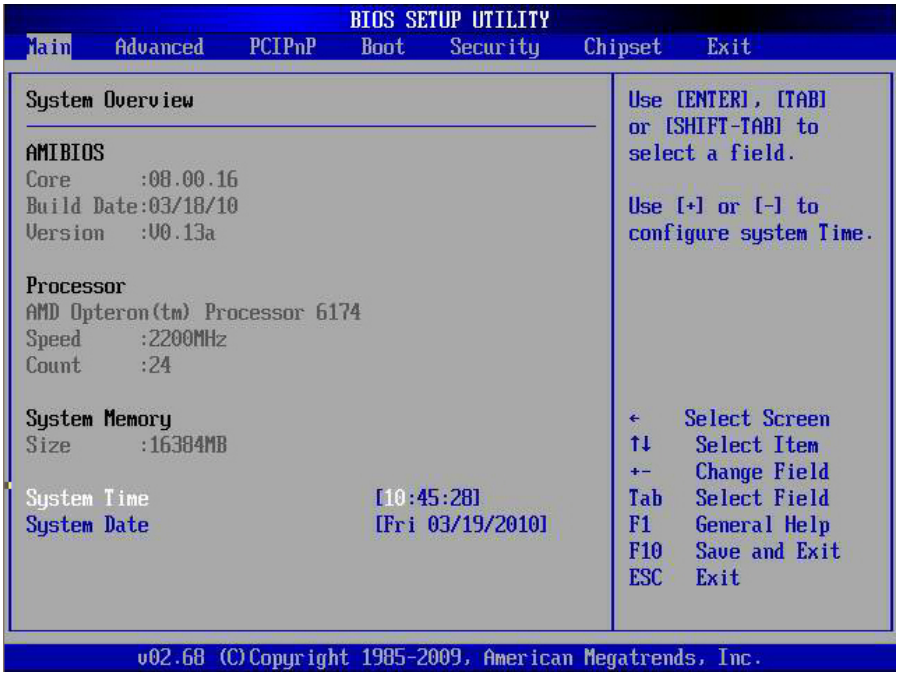
6.1.4 Setup Variations

Not all systems have the same BIOS setup layout or options. While the basic look and function of the BIOS setup remains more or less the same for most systems, the appearance of your Setup screen may differ from the charts shown in this section. Each system design and chipset combination requires a custom configuration. In addition, the final appearance of the Setup program depends on the system designer. Your system designer may decide that certain items should not be available for user configuration, and remove them from the BIOS setup program.

NOTE: The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated ones when this manual is written. Please visit TYAN's website at http://www.tyan.com for the information of BIOS updating.

6.2 Main Menu

In this section, you can alter general features such as the date and time.
Note that the options listed below are for options that can directly be changed within the Main Setup screen.



AMIBIOS
It displays the core number, date of BIOS build and the version of BIOS.

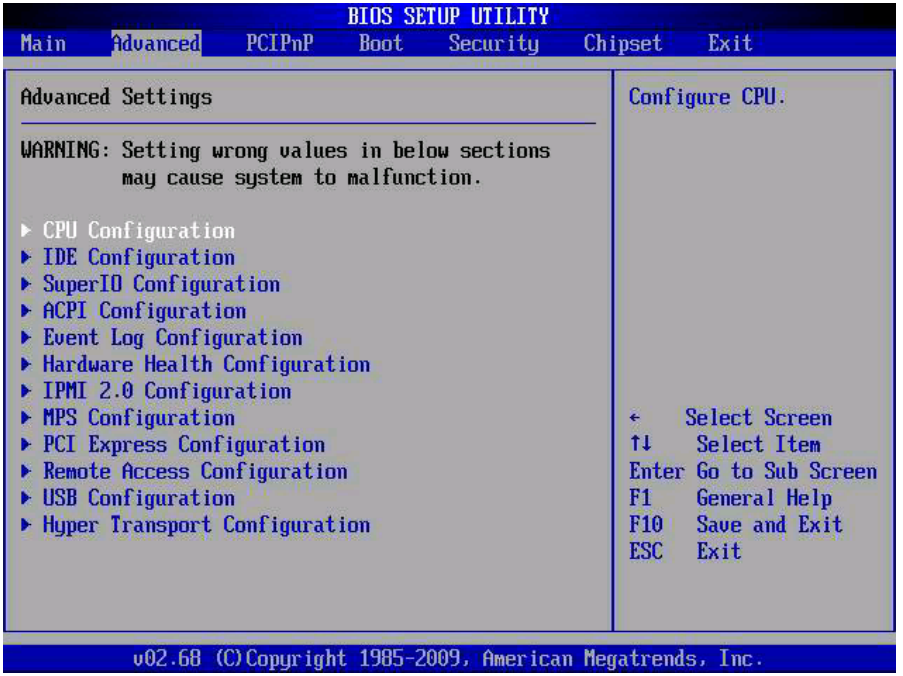
Processor
This displays the CPU information.

System Memory
This displays the amount of system memory present on the system.

System Time / Date setup
System Time: Adjusts the system clock.
HH (24 hours format): MM (Minutes): SS (Seconds)
System Date: Adjusts the system date.
MM (Months): DD (Days): YYYY (Years)

6.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



CPU Configuration
Configure CPU.

IDE Configuration
Configure the IDE devices.

Super IO Configuration
Configure the Super IO.

ACPI Configuration
Selection for Advanced ACPI Configuration.

Event Log Configuration
Configuration the Event Log.

Hardware Health Configuration
Configure / monitor the Hardware Health.

IPMI 2.0 Configuration
IPMI configuration including server monitoring and event log.

MPS Configuration
Configure the Multi-Processor Table.

PCI Express Configuration
Configure PCI Express Support.

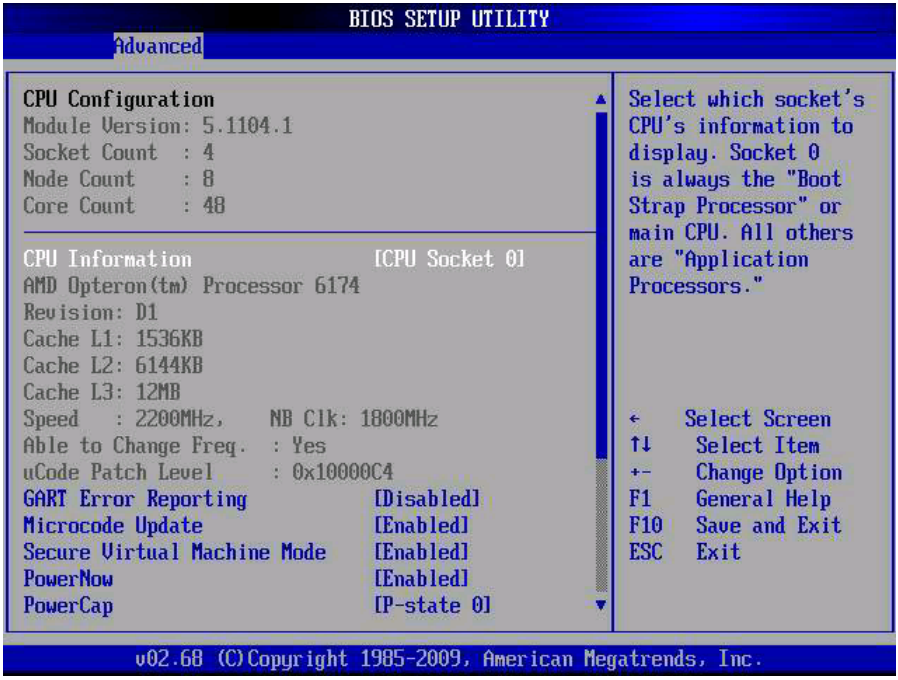
Remote Access Configuration
Configure Remote Access.

USB Configuration
Configure the USB support.

Hyper Transport Configuration
Configure the HT link.

6.3.1 Advanced CPU Configuration

This section allows you to fine-tune the processor options.


BIOS SETUP UTILITY
Advanced
CPU Configuration
Module Version: 5.1104.1
Socket Count : 4
Node Count : 8
Core Count : 48
CPU Information [CPU Socket 0]
AMD Opteron(tm) Processor 6174
Revision: D1
Cache L1: 1536KB
Cache L2: 6144KB
Cache L3: 12MB
Speed : 2200MHz, NB Clk: 1800MHz
Able to Change Freq. : Yes
uCode Patch Level : 0x10000C4
GART Error Reporting [Disabled]
Microcode Update [Enabled]
Secure Virtual Machine Mode [Enabled]
PowerNow [Enabled]
PowerCap [P-state 0]
Select which socket's CPU's information to display. Socket 0 is always the "Boot Strap Processor" or main CPU. All others are "Application Processors."
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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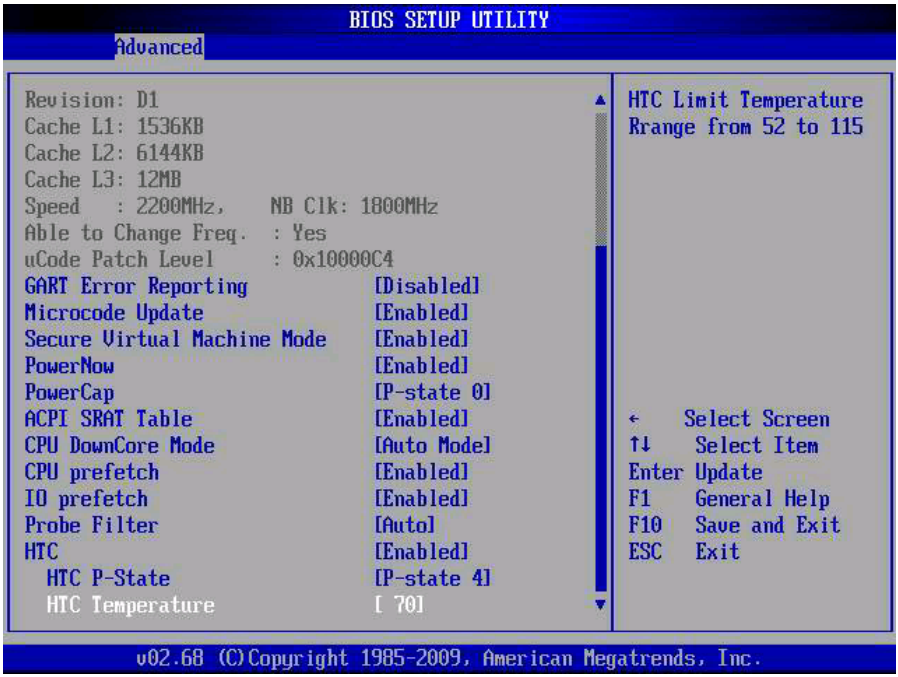


GART Error Reporting
This option should remain disabled for normal operation. The driver developer may enable it for the purpose of testing.

Disabled / Enabled

Microcode Update
Enable/disable the CPU Microcode update.

Disabled / **Enabled**

Secure Virtual Machine Mode
Enable/disable the CPU secure virtual machine mode (SVM).

Disabled / **Enabled**

PowerNow
Enable/disable the generation of ACPI_PPC, _PSS, and _PCT objects.

Disabled / **Enabled**

PowerCap
The option can decide the highest performance P-state in OS.

P-state 0 / P-state 1 / P-state 2 / P-state 3 / P-state 4

ACPI SRAT Table
Enable or disable the building of ACPI SRAT Table.
Disabled / **Enabled**

CPU DownCore Mode
Disable some Core in the CPU. Cold reset is needed after changing option.
Auto Mode / Maximum Core Level / No Leveling / 2 Cores / 4 Cores / 6 Cores / 8 Cores / 10 Cores / 12 Cores

CPU Prefetching
Enable or disable CPU prefetching.
Disabled / **Enabled**

IO Prefetching
Enable or disable IO prefetching.
Disabled / **Enabled**

Probe Filter
Initialization mode for Probe Filter.
Auto / Disable / MP Mode

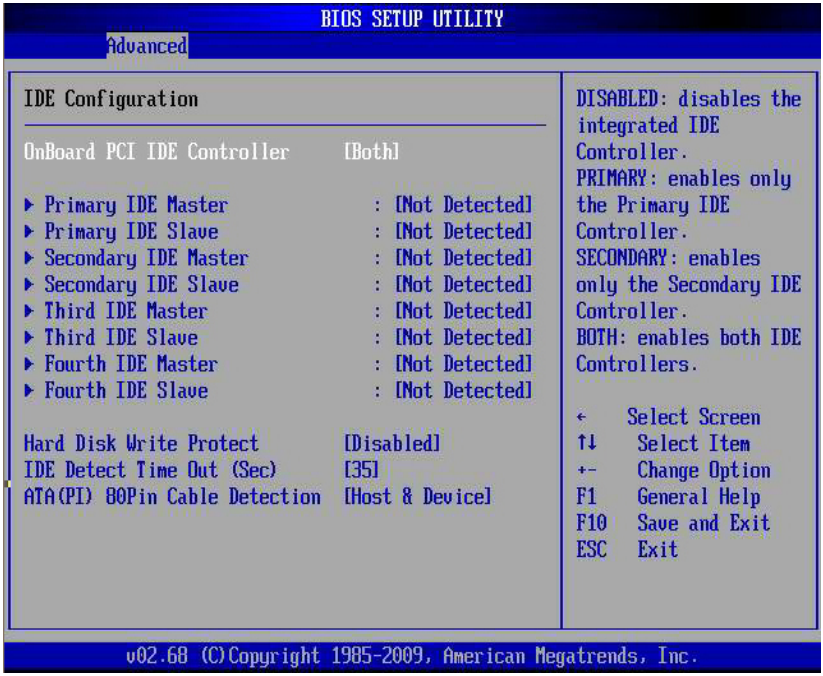
HTC
HW Thermal Control.
Disabled / Enabled

HTC P-State
HTC P-State limit.
P-state 0 / P-state 1 / P-state 2 / P-state 3 / **P-state 4**

HTC Temperature
HTC limit Temperature, range from 52 to 115.
70

NOTE: HTC P-State & HTC Temperature is hidden and will be appear when **HTC** is set to [Enabled].

6.3.2 Advanced IDE Configuration


BIOS SETUP UTILITY
Advanced
IDE Configuration
OnBoard PCI IDE Controller [Both]
Primary IDE Master : [Not Detected]
Primary IDE Slave : [Not Detected]
Secondary IDE Master : [Not Detected]
Secondary IDE Slave : [Not Detected]
Third IDE Master : [Not Detected]
Third IDE Slave : [Not Detected]
Fourth IDE Master : [Not Detected]
Fourth IDE Slave : [Not Detected]
Hard Disk Write Protect [Disabled]
IDE Detect Time Out (Sec) [35]
ATA(PI) 80Pin Cable Detection [Host & Device]
DISABLED: disables the integrated IDE Controller.
PRIMARY: enables only the Primary IDE Controller.
SECONDARY: enables only the Secondary IDE Controller.
BOTH: enables both IDE Controllers.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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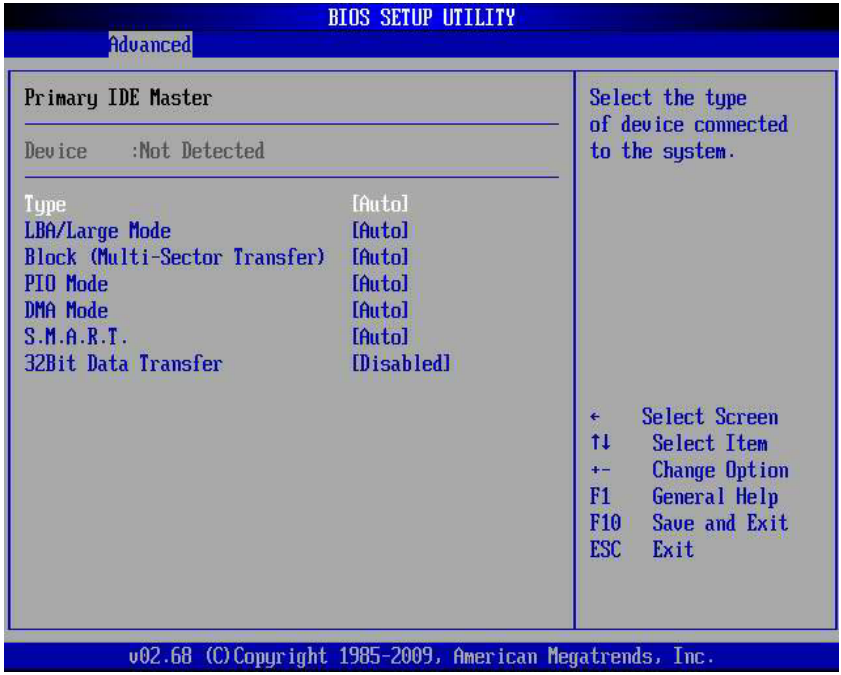
Onboard PCI IDE Controller
Disabled: disables the integrated IDE Controller
Primary: enables only the Primary IDE Controller
Secondary: enables only the Secondary IDE Controller
Both: enables both IDE Controller
Disabled / Primary / Secondary / **Both**

Hard Disk Write Protect
Disable/Enable device write protection. This will be effective only if device is accessed through BIOS.
Disabled / Enabled

IDE Detect Time Out (Sec)
Select the time out value for detecting ATA/ATAPI device(s).
0~35 (at 5 interval)

ATA(PI) 80Pin Cable Detection
Select the mechanism for detecting 80Pin ATA(PI) Cable.
Host & Device / Host / Device

6.3.2.1 Primary IDE Master Sub-Menu



Type
Selects the type of device connected to the system.
Auto / Disabled

LBA/Large Mode
Auto: Enabled LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.
Disabled: Disabled LBA Mode.
Auto / Disabled

Block (Multi-Sector Transfer)
Disabled: The Data transfer from and to the device occurs one sector at a time.
Auto: The Data transfer from and to the device occurs multiple sectors at a time if the device supports it.
Auto / Disabled

PIO Mode
Select the PIO Mode. Select Auto to enhance hard disk performance by optimizing the hard disk timing.

Auto / 0~4 (at 1 interval)

DMA Mode
Select DMA Mode.
Auto: Auto detected.

Auto / Disabled

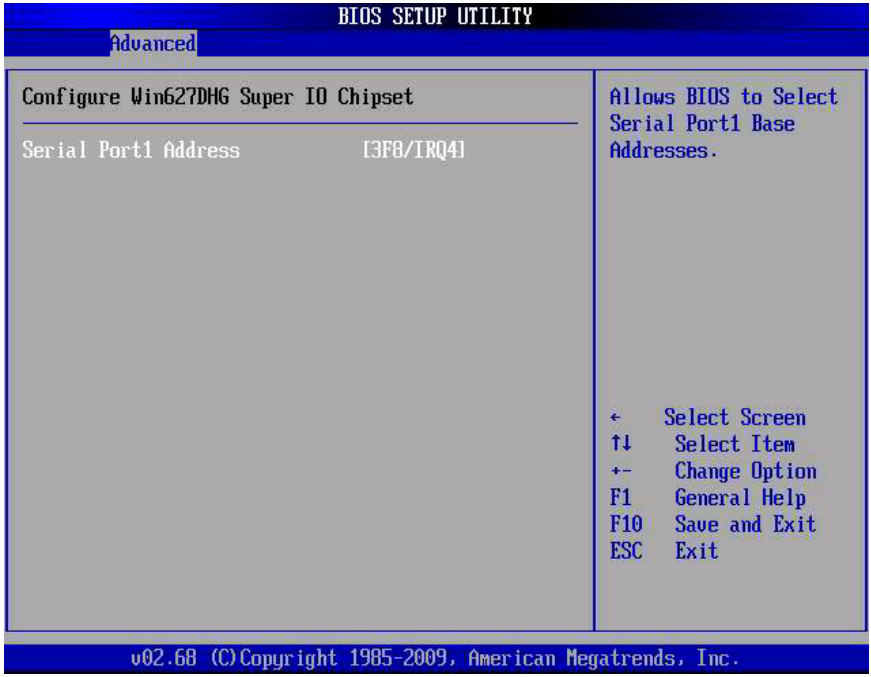
S.M.A.R.T
S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology) is a utility that monitors your disk status to predict hard disk failure.

Auto / Disabled / Enabled

32-Bit Data Transfer
Enable 32-bit to maximize the IDE hard disk data transfer rate.

Enabled / Disabled

6.3.3 Super I/O Configuration

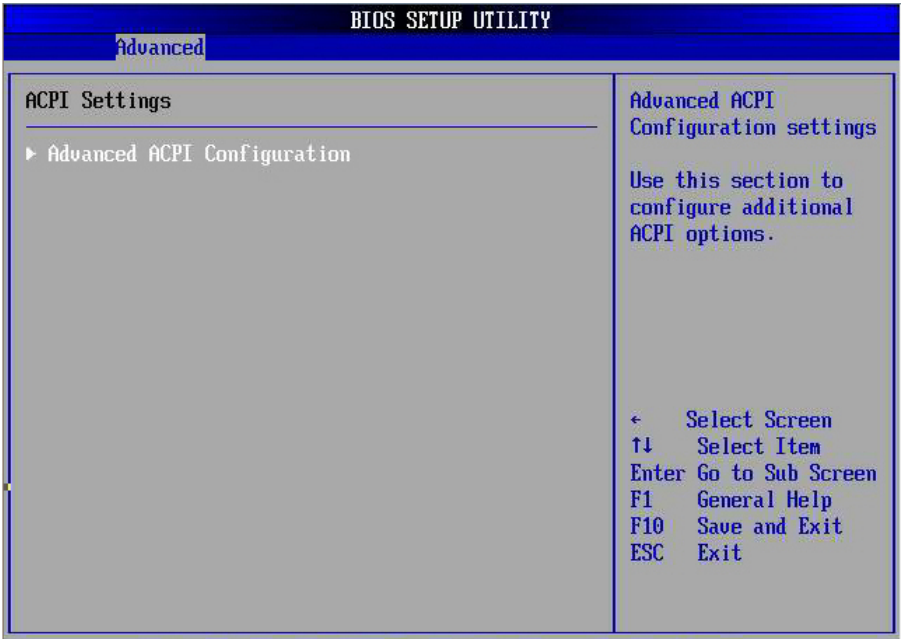


Serial Port1 Address

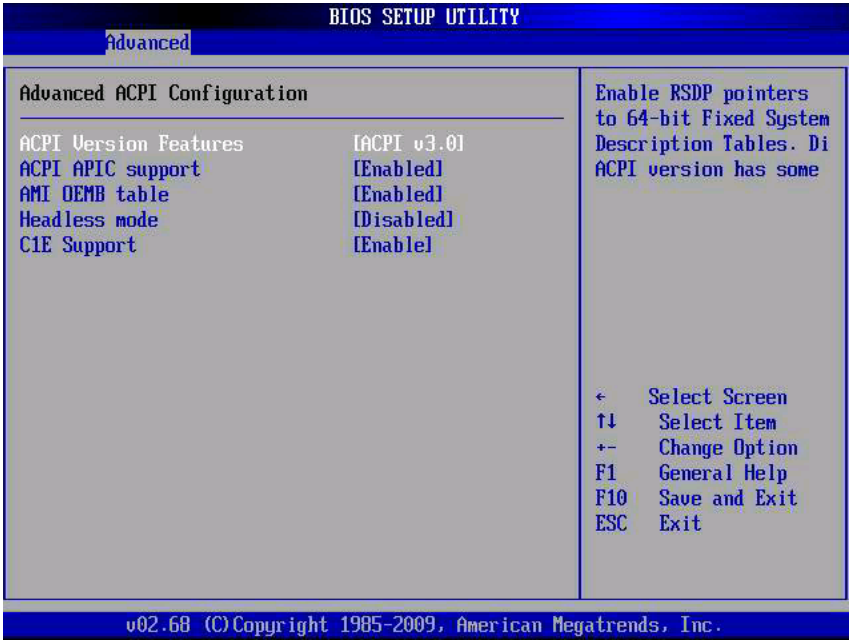
Allow BIOS to configure Serial Port1 Base Address.

Disabled / **3F8/IRQ4** / 3E8/IRQ4

6.3.4 ACPI Configuration



6.3.4.1 Advanced ACPI Configuration


BIOS SETUP UTILITY
Advanced
Advanced ACPI Configuration
ACPI Version Features [ACPI v3.0]
ACPI APIC support [Enabled]
AMI OEMB table [Enabled]
Headless mode [Disabled]
C1E Support [Enable]
Enable RSDP pointers to 64-bit Fixed System Description Tables. Di ACPI version has some
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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ACPI Version Features
Set this value to allow or prevent the system to be complaint with the ACPI 2.0 specification.

ACPI 3.0 / ACPI 2.0 / ACPI 1.0

ACPI APIC Support
This option allows you to define whether or not to enable APIC features.

Enabled / Disabled

AMI OEMB Table
Set this value to allow the ACPI BIOS to add a pointer to an OEMB table in the Root System Description Table (RSDT) table.

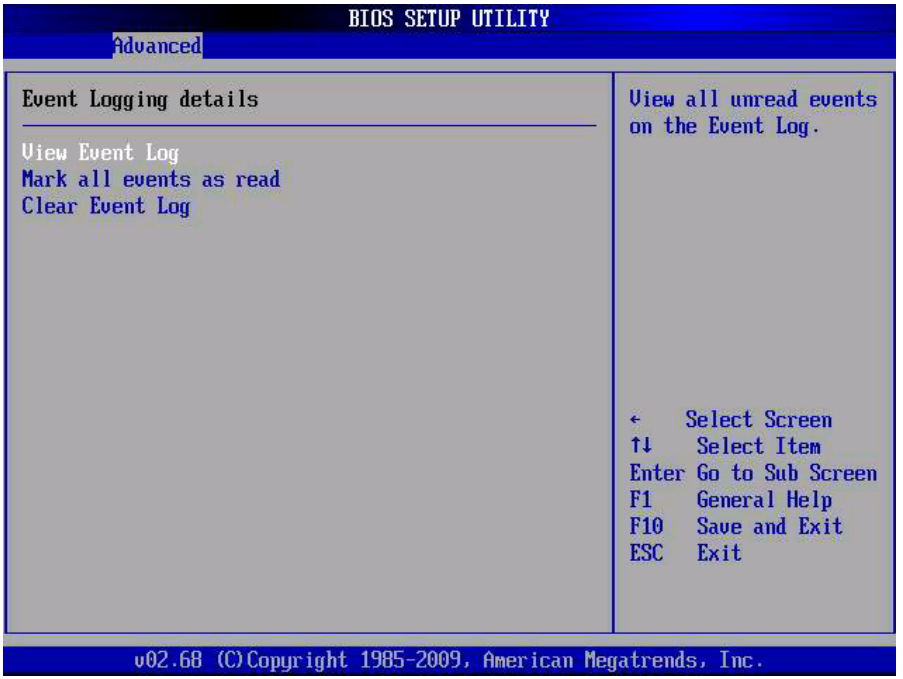
Enabled / Disabled

NOTE: OEMB table is used to pass POST data to the AMI code during ACPI O/S operations.

Headless Mode
Enable or disable Headless operation mode through ACPI.
Disabled / Enabled

C1E Support
Enhanced C1 state support.
Disabled / **Enabled**

6.3.5 Event Log Configuration

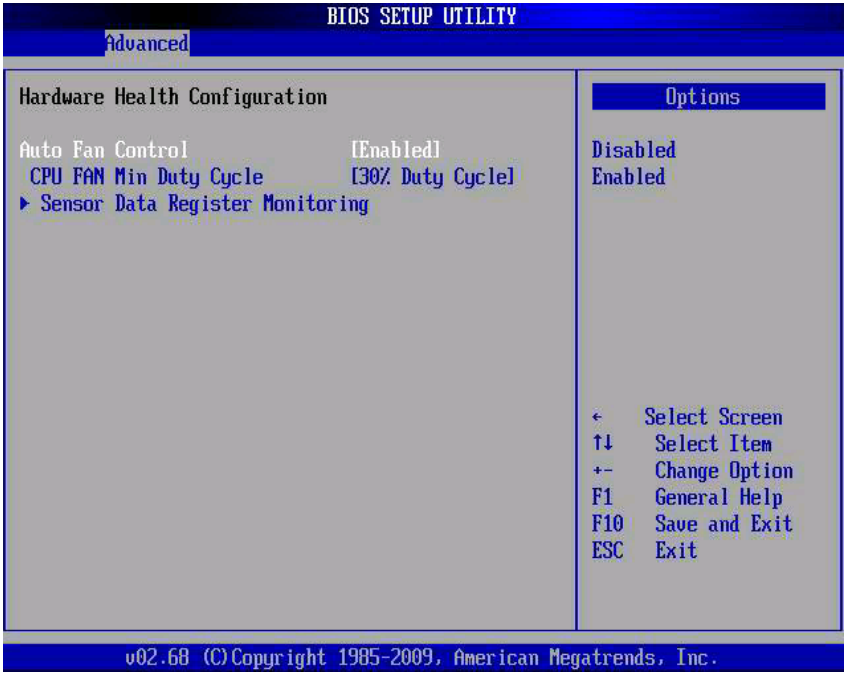


View Event Log
View all unread events on the Event Log.

Mark all events as read
Mark all unread events as read.

Clear Event Log
Discard all events in the Event Log.

6.3.6 Hardware Health Configuration



Auto Fan Control
Select Smart FAN mode:
- Disabled:
- Enabled: fan speed up as temperature goes up

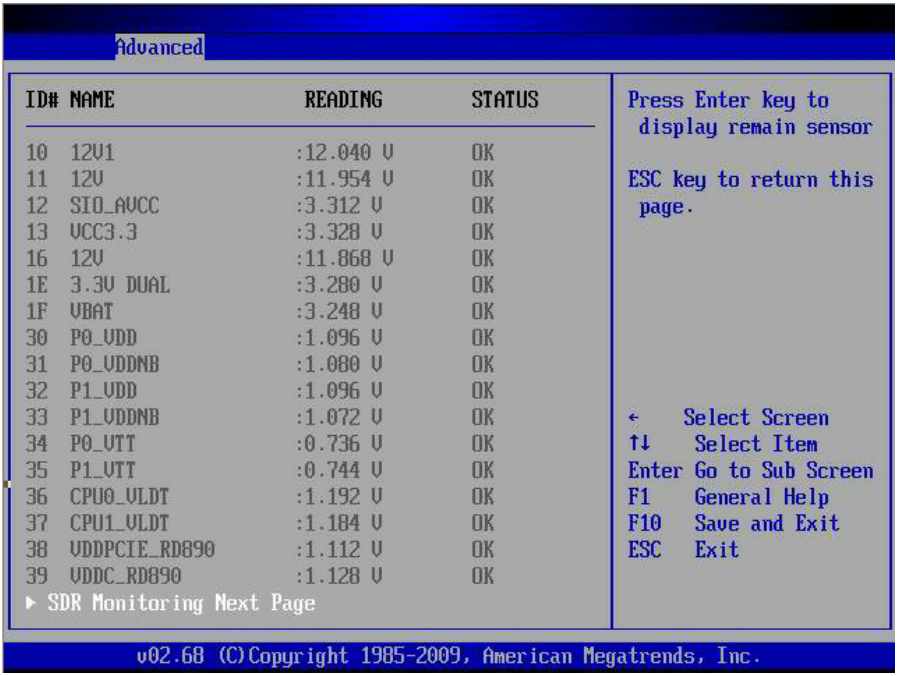
Disabled **/ Enabled**

CPU FAN Min Duty Cycle
This item allows you to set minimum PWM Duty Cycle.

30% Duty Cycle / 50% / 40% / 0%

NOTE: This item is hidden and will appear when ***Auto FAN Power Control*** is set to [Enabled].

6.3.6.1 Sensor Data Register Monitoring


Advanced
ID# NAME READING STATUS
10 12V1 :12.040 V OK
11 12V :11.954 V OK
12 SIO_AVCC :3.312 V OK
13 VCC3.3 :3.328 V OK
16 12V :11.868 V OK
1E 3.3V DUAL :3.280 V OK
1F VBAT :3.248 V OK
30 P0_VDD :1.096 V OK
31 P0_VDDNB :1.080 V OK
32 P1_VDD :1.096 V OK
33 P1_VDDNB :1.072 V OK
34 P0_VTT :0.736 V OK
35 P1_VTT :0.744 V OK
36 CPU0_VLDT :1.192 V OK
37 CPU1_VLDT :1.184 V OK
38 VDDPCIE_RD890 :1.112 V OK
39 VDDC_RD890 :1.128 V OK
SDR Monitoring Next Page
Press Enter key to display remain sensor
ESC key to return this page.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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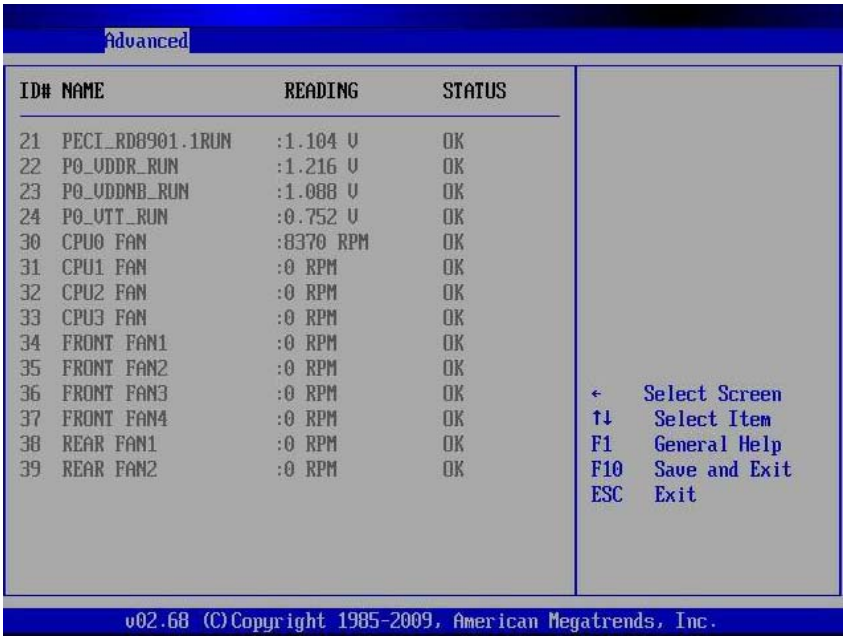
Advanced
ID# NAME READING STATUS
21 PECI_RD8901.1RUN :1.104 V OK
22 P0_VDDR_RUN :1.216 V OK
23 P0_VDDNB_RUN :1.088 V OK
24 P0_VTT_RUN :0.752 V OK
30 CPU0 FAN :8370 RPM OK
31 CPU1 FAN :0 RPM OK
32 CPU2 FAN :0 RPM OK
33 CPU3 FAN :0 RPM OK
34 FRONT FAN1 :0 RPM OK
35 FRONT FAN2 :0 RPM OK
36 FRONT FAN3 :0 RPM OK
37 FRONT FAN4 :0 RPM OK
38 REAR FAN1 :0 RPM OK
39 REAR FAN2 :0 RPM OK
← Select Screen
↑↓ Select Item
F1 General Help
F10 Save and Exit
ESC Exit
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Read only. It can not be modified in user mode.

6.3.7 IPMI 2.0 Configuration

BIOS SETUP UTILITY
Advanced
IPMI 2.0 Configuration
Status Of BMC Working
▶ View BMC System Event Log
Clear BMC System Event Log
▶ Set LAN Configuration
▶ Set PEF Configuration
BMC Watch Dog Timer Action [Disabled]
BMC Alert LED and Beep [OFF]
FW Key : [0000000]
View all events in the BMC Event Log.
It will take a max. of 15 seconds to read all BMC SEL records.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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Status of BMC
Read only.

Clear BMC System Event Log
Clear all events in BMC System Event Log.

Set LAN Configuration
Set LAN Configuration Parameters Command.

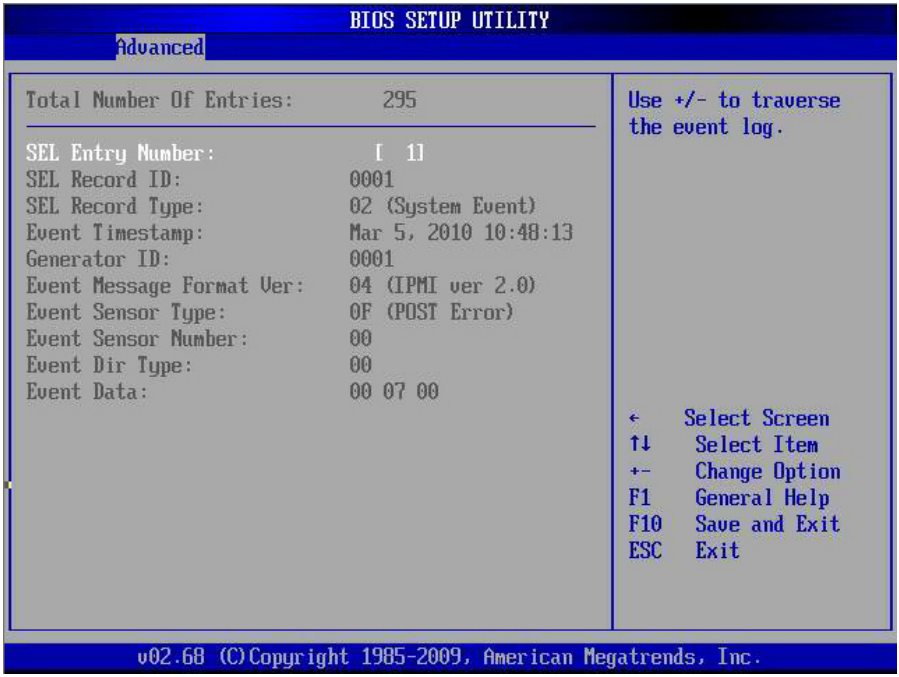
Set PEF Configuration
Set PEF Configuration Parameters Command.

BMC Watch Dog Timer Action
Allows the BMC to reset or power down the system if the operating system crashes or hangs.
Disabled / Enabled

BMC Alert LED and Beep
BMC Alert LED and Beep.
OFF / ON

FW Key
Enter IPMI FW Key upgrade to IPMI or iKVM function.
[0000000]

6.3.7.1 View BMC System Event Log


BIOS SETUP UTILITY
Advanced
Total Number Of Entries: 295
SEL Entry Number: [1]
SEL Record ID: 0001
SEL Record Type: 02 (System Event)
Event Timestamp: Mar 5, 2010 10:48:13
Generator ID: 0001
Event Message Format Ver: 04 (IPMI ver 2.0)
Event Sensor Type: 0F (POST Error)
Event Sensor Number: 00
Event Dir Type: 00
Event Data: 00 07 00
Use +/- to traverse the event log.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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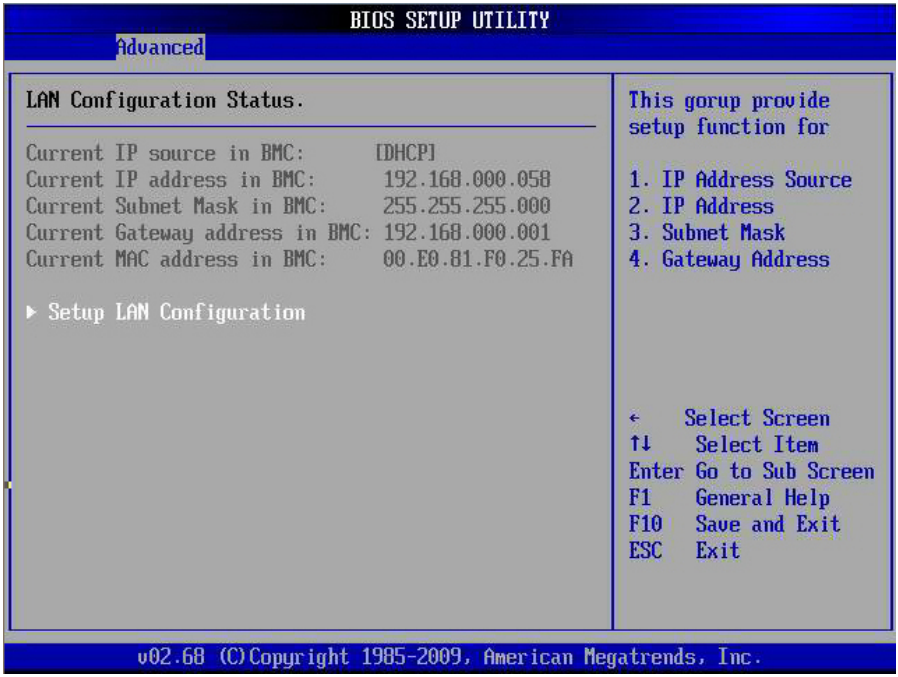
Read only. It can not be modified in user mode.

6.3.7.2 Set LAN Configuration


BIOS SETUP UTILITY
Advanced
LAN Configuration Status.
Current IP source in BMC: [DHCP]
Current IP address in BMC: 192.168.000.058
Current Subnet Mask in BMC: 255.255.255.000
Current Gateway address in BMC: 192.168.000.001
Current MAC address in BMC: 00.E0.81.F0.25.FA
Setup LAN Configuration
This gorup provide setup function for
1. IP Address Source
2. IP Address
3. Subnet Mask
4. Gateway Address
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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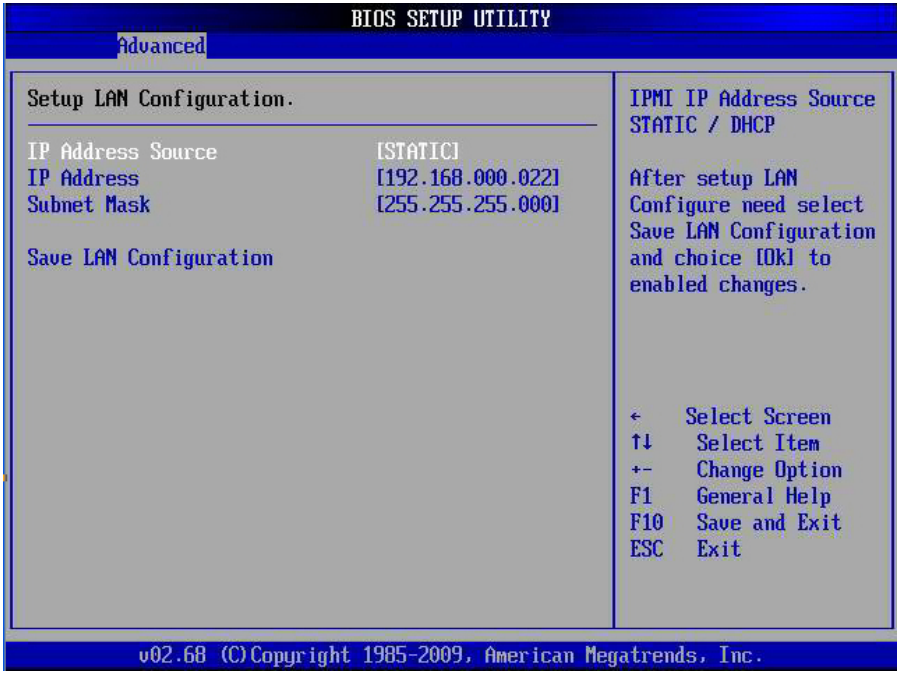
Read only. It can not be modified in user mode.

6.3.7.2.1 Setup LAN Configuration



IP Address Source
Select IPMI IP Address Source.
STATIC / DHCP

> **NOTE:**
> **IP Address** and **Subnet Mask** appear when **IP Address Source** is set to [STATIC].

IP Address / Subnet Mask
Read only. It can not be modified in user mode.

Save LAN Configuration
After setup LAN Configuration, select Save LAN Configuration and click [OK] to enable changes.

6.3.7.3 Set PEF Configuration

PEF Support
Enable or disable PEF support.
Enabled / Disabled

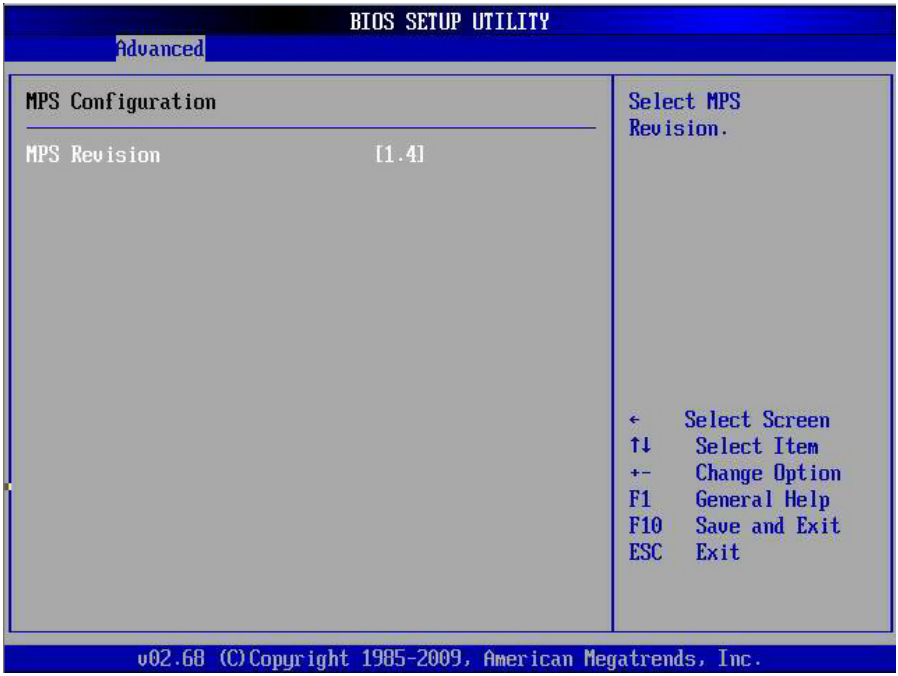
PEF Action Global Control
Select action for PEF Action Global Control.
Alert / Power Down / Reset System / Power Cycle / OEM Action / Diagnostic. Int.

Alert Startup Delay
Enable/disable Alert Startup Delay.
Disabled / Enabled

Startup Delay
Enable/disable Startup Delay.
Disabled / Enabled

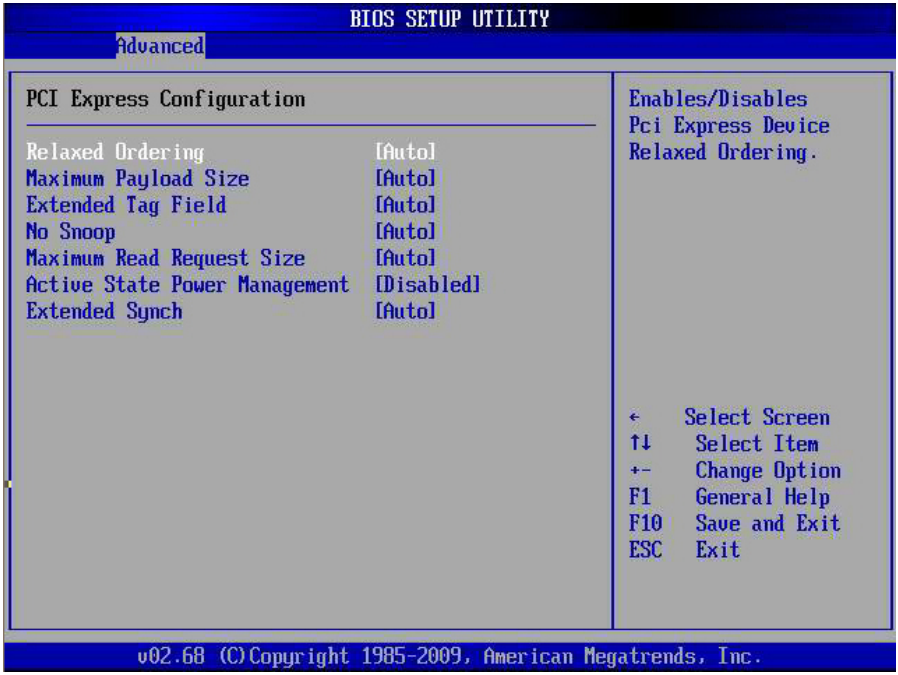
Event Message For PEF Action
Enable/disable Event Message for PEF Action.
Disabled / Enabled

6.3.8 MPS Configuration



MPS Revision
Select MPS Revision.
1.4 / 1.1

6.3.9 PCI-Express Configuration



Relax Ordering
Enables / Disables PCI Express Device Relaxed Ordering.
Auto / Disabled / Enabled

Maximum Payload Size
Set Maximum Payload of PCI Express Device or allow System BIOS select the value.
Auto / Disabled

Extended Tag Field
If Enabled, allows Device to use 8-bit Tag field as a requester.
Auto / Disabled

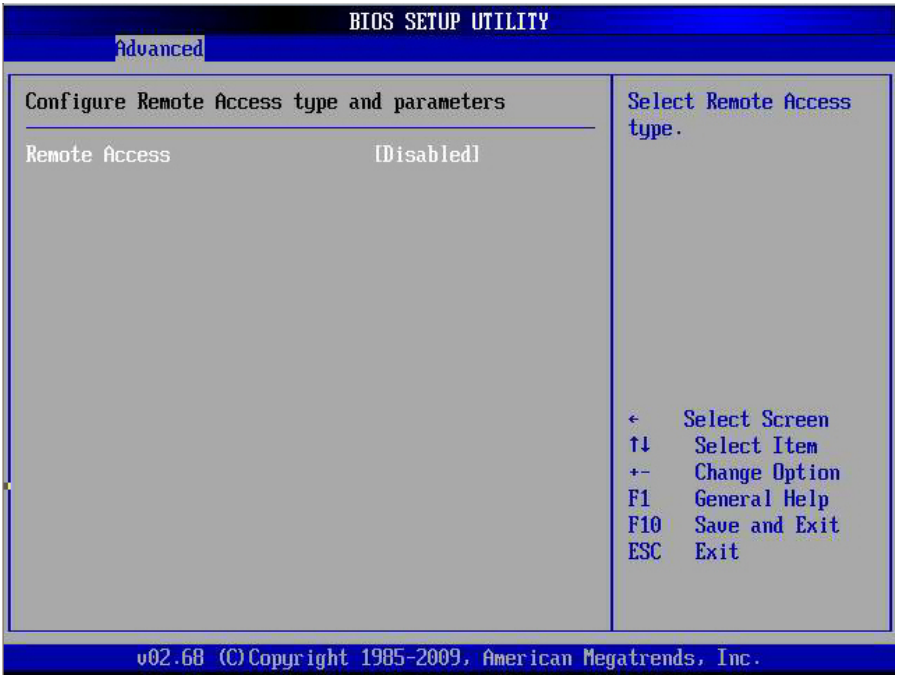
No Snoop
Enables/Disables PCI Express Device No Snoop option.
Auto / Disabled

Maximum Read Request Size
Set Maximum Read Request Size of PCI Express Device or allow System BIOS select the value.
Auto / Disabled

Active State Power Management
Enable/disable PCI Express L0s AND L1 link power states.
Disabled / Enabled

Extended Synch
If enabled, allows generation of Extended Synchronization patterns.
Auto / Disabled

6.3.10 Remote Access Configuration



Remote Access
Enables remote access to system through serial port.
Disabled / Enabled

> **NOTE:**
> The following BIOS items are available only when **Remote Access** is set to [Enabled].

Serial Port Number
Select Serial Port for cosole redirection. Make sure the selected port is enabled.
COM1 / BMC VUR

Serial Port Mode
Select Serial Port settings.

Flow Control
Select Flow Control for console redirection.
None / Hardware / Software

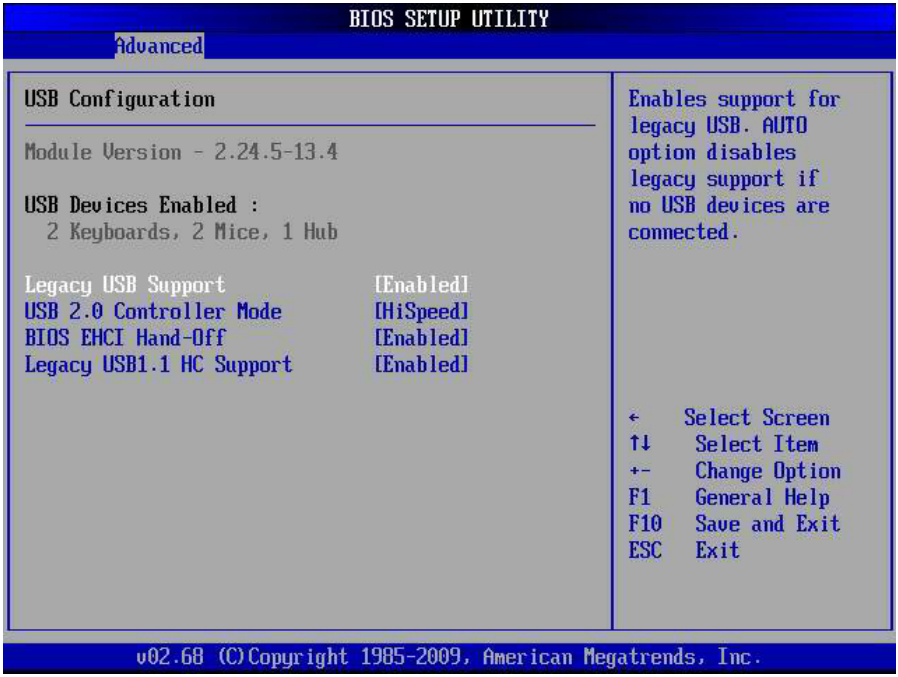
Redirection After BIOS POST
Disabled: Turns off the redirection after POST Boot Loader.
Boot Loader: Redirection is active during POST and during Boot Loader.
Always: Redirection is always active. (Some Oss may not work if set to Always)
Always / Disabled / Boot Loader

Terminal Type
Select the target terminal type.
ANSI / VT100 / VT-UTF8

VT-UTF8 Combo Key Support
Enable VT-UFT8 Combination Key Support for ANSI/VT100 terminals.
Enabled / Disabled

Sredir Memory Display Delay
Gives the delay in seconds to display memory information.
No Delay / Delay 1 Sec / Delay 2 Sec / Delay 4 Sec

6.3.11 USB Configuration


BIOS SETUP UTILITY
Advanced
USB Configuration
Module Version - 2.24.5-13.4
USB Devices Enabled :
2 Keyboards, 2 Mice, 1 Hub
Legacy USB Support [Enabled]
USB 2.0 Controller Mode [HiSpeed]
BIOS EHCI Hand-Off [Enabled]
Legacy USB1.1 HC Support [Enabled]
Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Legacy USB Support
Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.

Enabled / Disabled / Auto

USB 2.0 Controller Mode
Configure the USB 2.0 controller in Hi Speed (480 Mbps) or Full Speed (12Mbps).

Hi Speed / Full Speed

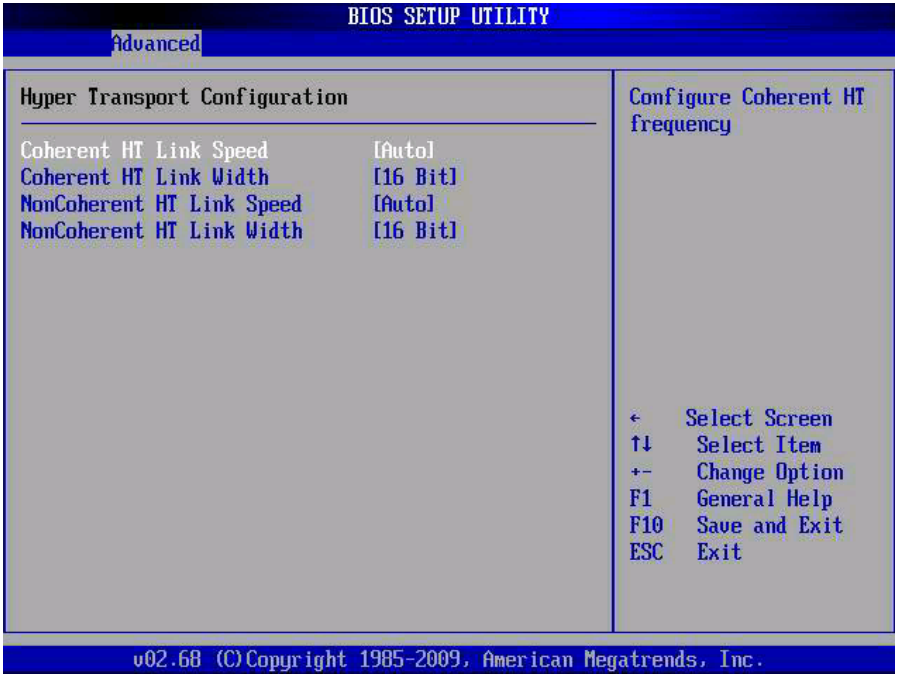
BIOS EHCI Hand-OFF
This is a work around for OSes without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.

Enabled / Disabled

Legacy USB1.1 HC Support
Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.

Enabled / Disabled

6.3.12 Hyper Transport Configuration



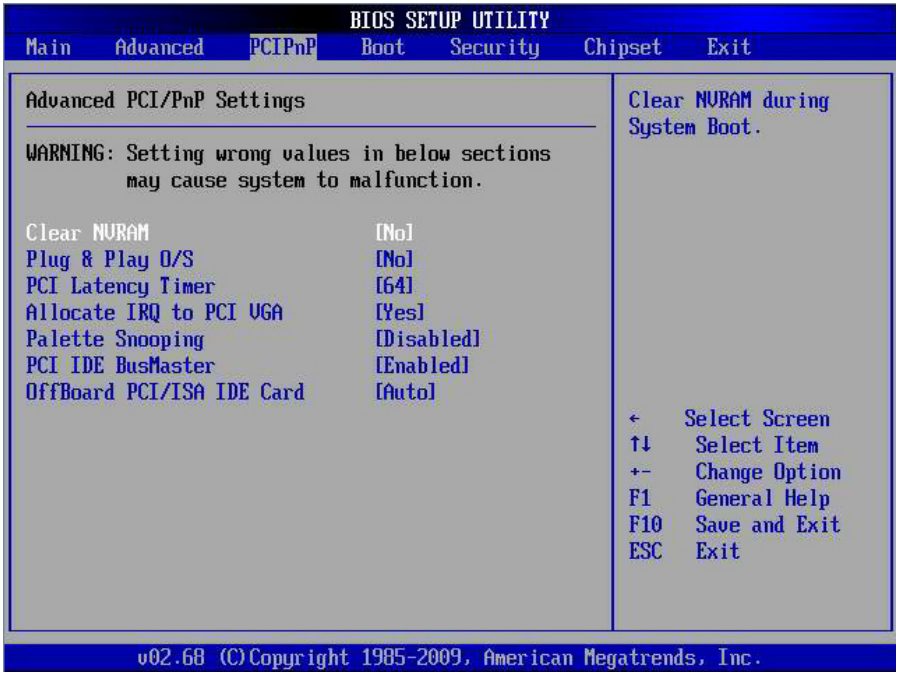
Coherent HT Link Speed
Configure Coherent HT frequency.
Auto / 400MHz / 600MHz / 800MHz / 1GHz / 1.2GHz / 1.4GHz / 1.6 GHz
1.8GHz / 2.0GHz / 2.2GHz / 2.4GHz / 2.6GHz / 2.8GHz / 3.0GHz / 3.2GHz

Coherent HT Link Width
Configure Coherent HT Width
8bit / 16bit

NonCoherent HT Link Speed
Configure NonCoherent HT frequency.
Auto / 400MHz / 600MHz / 800MHz / 1GHz / 1.2GHz / 1.4GHz / 1.6 GHz
1.8GHz / 2.0GHz / 2.2GHz / 2.4GHz / 2.6GHz

NonCoherent HT Link Width
Configure NonCoherent HT Width
8bit / 16bit

6.4 PCI/PnP Menu


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
Clear NVRAM [No]
Plug & Play O/S [No]
PCI Latency Timer [64]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
PCI IDE BusMaster [Enabled]
OffBoard PCI/ISA IDE Card [Auto]
Clear NVRAM during System Boot.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Clear NVRAM
Clear NVRAM during system Boot.
No / Yes

Plug & Play O/S
No: lets the BIOS configure all the devices in the system.
Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
No / Yes

PCI Latency Timer
This setting controls how many PCI clocks each PCI device can hold the bus before another PCI device takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth.
Values in units of PCI clocks for PCI device latency timer register
64 / 32 / 96 / 128 / 160 / 192 / 224 / 248

Allocate IRQ to PCI VGA
Yes: assigns IRQ to PCI VGA card if card requests IRQ.
Yes / No

Palette Snooping
This is the default setting and should not be changed unless the VGA card manufacturer requires Palette Snooping to be Enabled.
Enabled: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.

Disabled / Enabled

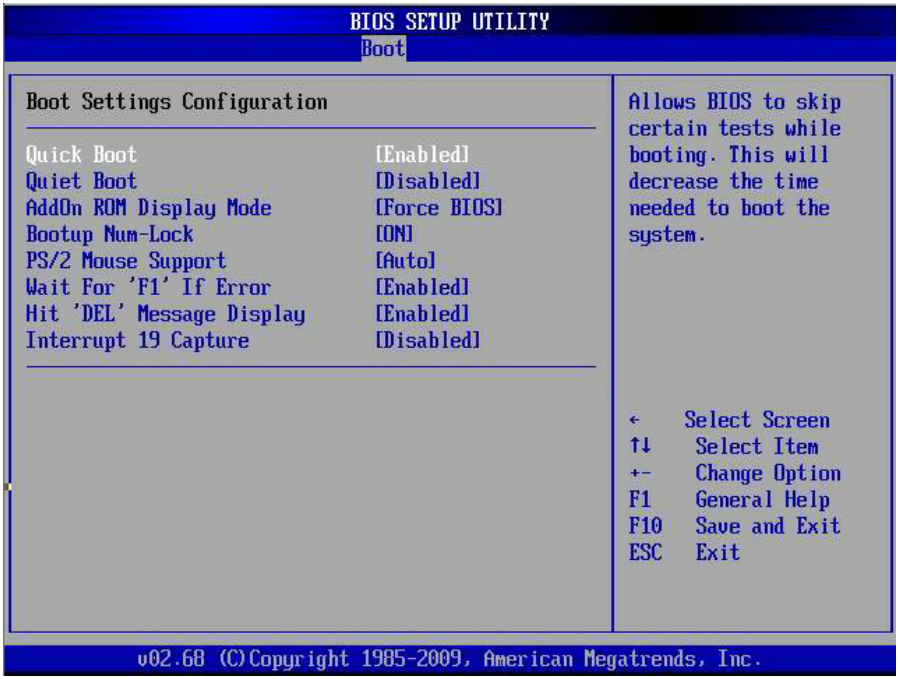
PCI IDE Bus Master
Enabled: BIOS uses PCI bus mastering for reading / writing to IDE drives.

Enabled / Disabled

Offboard PCI/ISA IDE Card
Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.
Auto: Works for most PCI IDE cards.

Auto / PCI Slot 1 / PCI Slot 2 / PCI Slot 3 / PCI Slot 4/ PCI Slot 5 / PCI Slot 6

6.5 Boot Menu


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [ON]
PS/2 Mouse Support [Auto]
Wait For 'F1' If Error [Enabled]
Hit 'DEL' Message Display [Enabled]
Interrupt 19 Capture [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Quick Boot
This option allows user bypass BIOS self test during POST.
Enabled / Disabled

Quiet Boot
Disabled: displays normal POST messages.
Enabled: displays OEM log instead of POST messages.
Disabled / Enabled

Add On ROM Display Mode
Allows user to force BIOS/Option ROM of add-on cards to be displayed during quiet boot.
Force BIOS / Keep Current

Boot Up Num-Lock
Selects Power-on state for Numlock.
On / Off

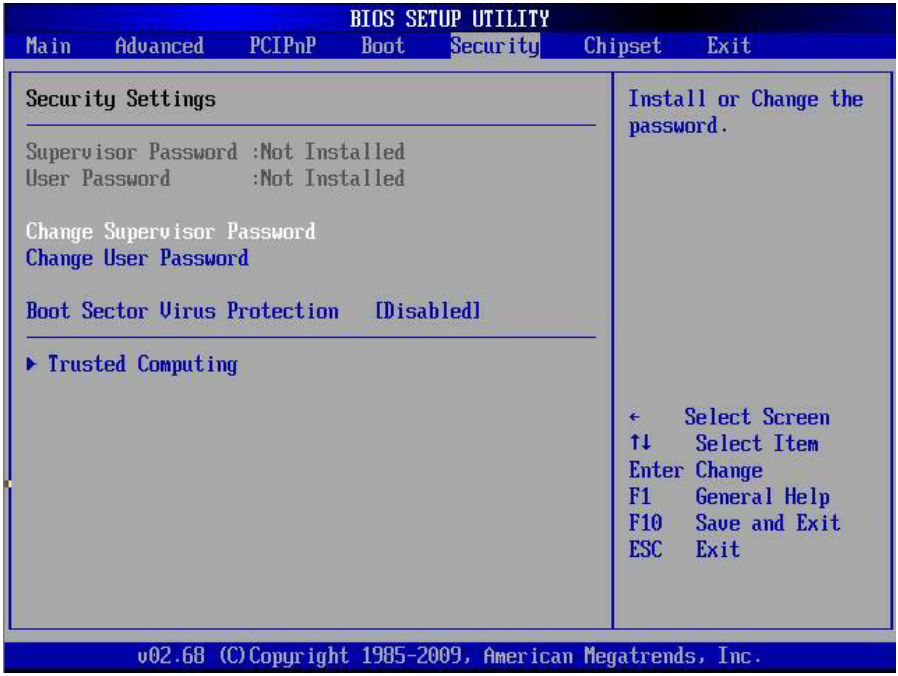
PS/2 Mouse Support
Select support for PS/2 Mouse.
Auto / Enabled / Disabled

Wait for 'F1' If Error
Waits for F1 key to be present if error occurs.
Enabled / Disabled

Hit 'DEL' Message Display
Displays "Press DEL to run Setup in POST".
Enabled / Disabled

Interrupt 19 Capture
Enabled: allows option ROMs to trap interrupt 19.
Enabled / Disabled

6.6 Security Menu



Supervisor Password/User Password
Read only.

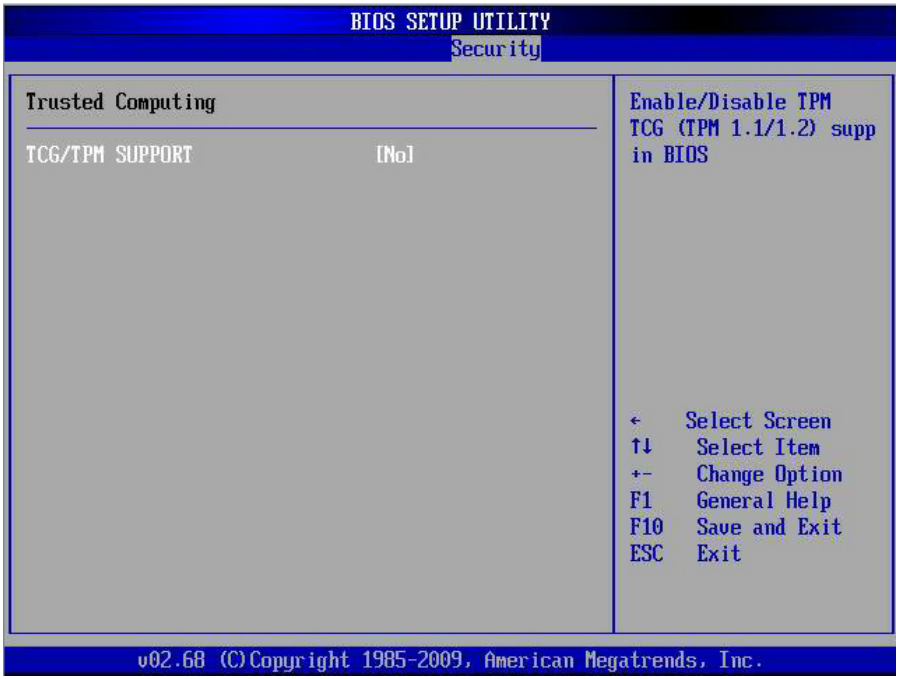
Change Supervisor Password
Install or change the password.

Change User Password
Install or change the password.

Boot Sector Virus Protection
When it is set to [Enabled], BIOS will issue a virus warning message and beep if a write to the boot sector or the partition table of the HDD is attempted.

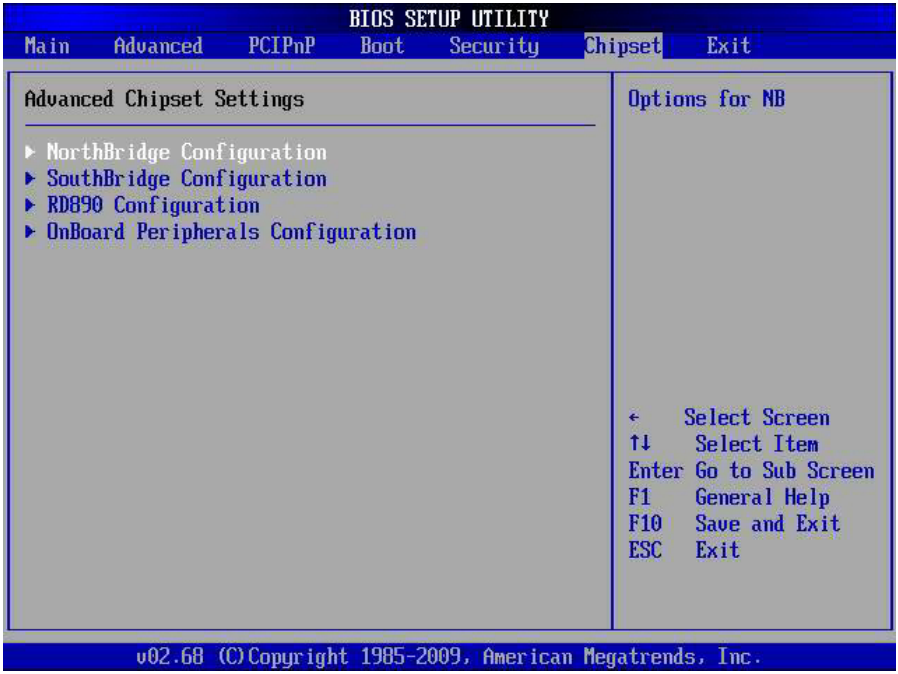
Disabled / Enabled

6.6.1 Trusted Computing



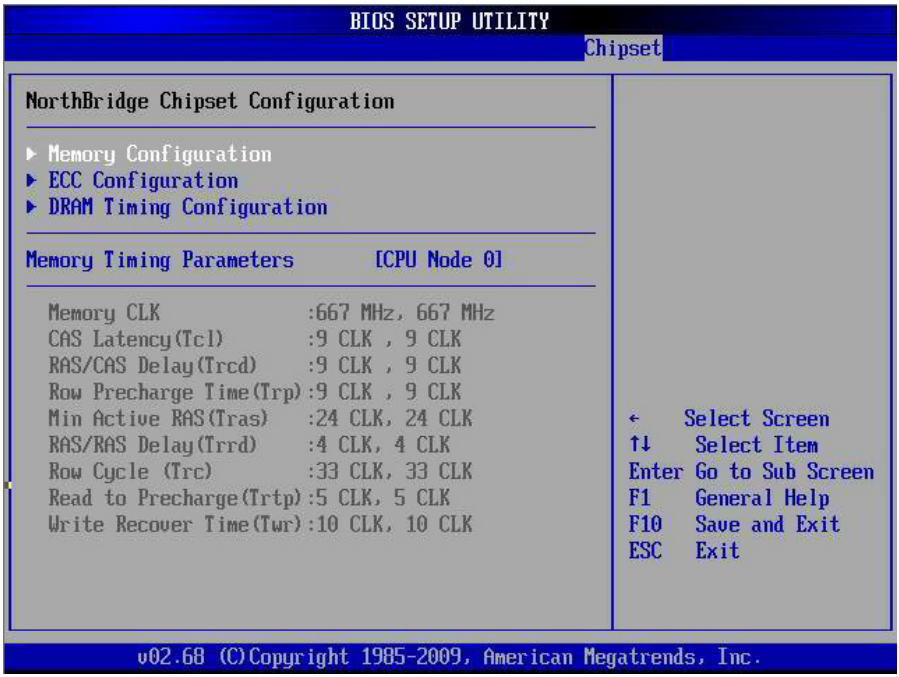
TCG/TPM Support
Enable / Disable TPM TCG (TPM 1.1/1.2) support in BIOS.
No / Yes

6.7 Chipset Menu



Allow you to change NorthBridge, SouthBridge, RD890 and Onboard Peripherals Configuration.

6.7.1 North Bridge Configuration


BIOS SETUP UTILITY
Chipset
NorthBridge Chipset Configuration
Memory Configuration
ECC Configuration
DRAM Timing Configuration
Memory Timing Parameters [CPU Node 0]
Memory CLK :667 MHz, 667 MHz
CAS Latency(Tcl) :9 CLK , 9 CLK
RAS/CAS Delay(Trcd) :9 CLK , 9 CLK
Row Precharge Time(Trp) :9 CLK , 9 CLK
Min Active RAS(Tras) :24 CLK, 24 CLK
RAS/RAS Delay(Trrd) :4 CLK, 4 CLK
Row Cycle (Trc) :33 CLK, 33 CLK
Read to Precharge(Trtp) :5 CLK, 5 CLK
Write Recover Time(Twr) :10 CLK, 10 CLK
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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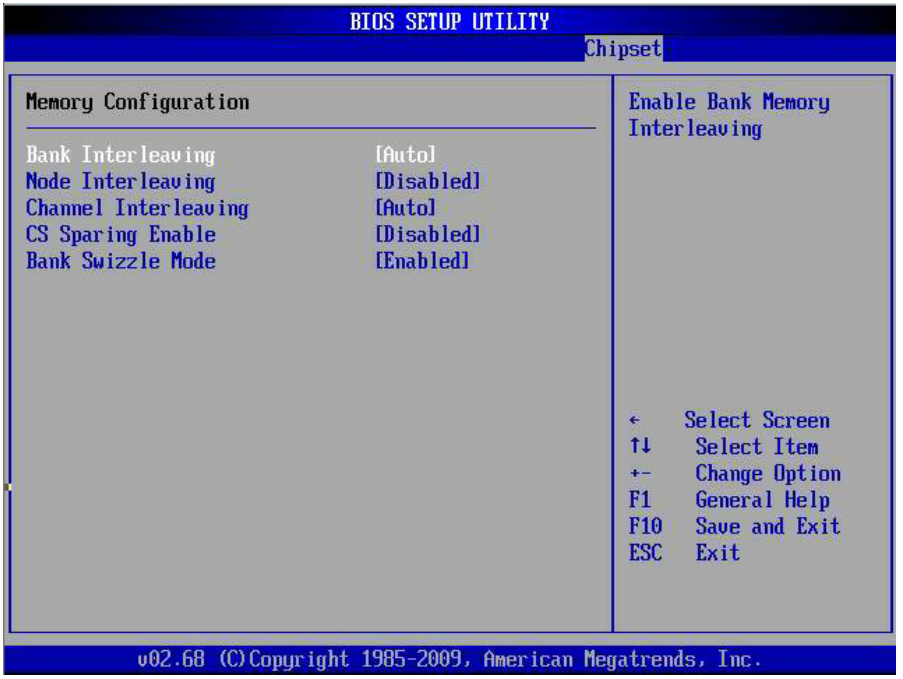
Memory Timing Parameters

To select which node's timing parameters to display.

CPU Node 0 / CPU Node 1

6.7.1.1 Memory Configuration



Bank Interleaving
Bank Interleave setting has to do with the actual RAM chip properties, most good quality RAM chips have "4-bank interleaving" and work best at this setting. Inter-leaving controls how actual hits to memory takes place.
Enable Bank Memory Interleaving.
Auto / Disabled

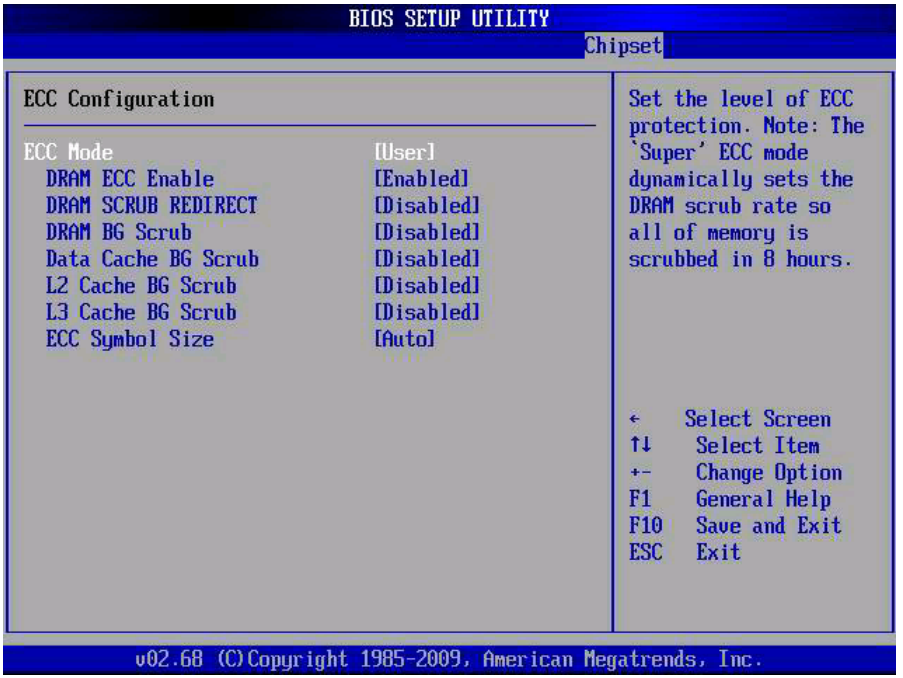
Node Interleaving
Enable Node Memory Interleaving.
Disabled / Enabled

Channel Interleaving
Enable Channel Memory Interleaving.
Auto / Disabled

CS Sparing Enable
Reserve a spare memory rank in each node.
Disabled / Enabled

Bank Swizzle Mode
Enable or disable bank swizzle mode.
Enabled / Disabled

6.7.1.2 ECC Configuration


BIOS SETUP UTILITY
Chipset
ECC Configuration
ECC Mode [User]
DRAM ECC Enable [Enabled]
DRAM SCRUB REDIRECT [Disabled]
DRAM BG Scrub [Disabled]
Data Cache BG Scrub [Disabled]
L2 Cache BG Scrub [Disabled]
L3 Cache BG Scrub [Disabled]
ECC Symbol Size [Auto]
Set the level of ECC protection. Note: The 'Super' ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8 hours.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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ECC Mode
Select the level of ECC protection. Note: The "Super" ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8 hours.
Basic / Super / Disabled / Good / Max / User

DRAM ECC Enable
DRAM ECC allows hardware to report and correct memory errors automatically maintaining system integrity.
Enabled / Disabled

DRAM SCRUB REDIRECT
DRAM SCRUB REDIRECT allows the system to correct DRAM ECC errors immediately when they occur, even if background scrubbing is on.
Enabled / Disabled

DRAM BG Scrub
DRAM scrubbing corrects memory errors so later reads are correct. Doing this while memory is not being used improves performance.
Disabled / 40ns / 80ns / 160ns / 320ns / 640ns / 1.28us / 2.56us / 5.12us / 10.2us / 20.5us / 41.0us / 81.9us / 163.8us / 327.7us / 655.4us

Data Cache BG Scrub

Allows the L1 Data Cache ram to be corrected while idle.

Disabled / 40ns / 80ns / 160ns / 320ns / 640ns / 1.28us / 2.56us / 5.12us / 10.2us / 20.5us / 41.0us / 81.9us / 163.8us / 327.7us / 655.4us

L2 Cache BG Scrub

Allows the L2 Data Cache ram to be corrected while idle.

Disabled / 40ns / 80ns / 160ns / 320ns / 640ns / 1.28us / 2.56us / 5.12us / 10.2us / 20.5us / 41.0us / 81.9us / 163.8us / 327.7us / 655.4us

L3 Cache BG Scrub

Allows the L3 Data Cache ram to be corrected while idle.

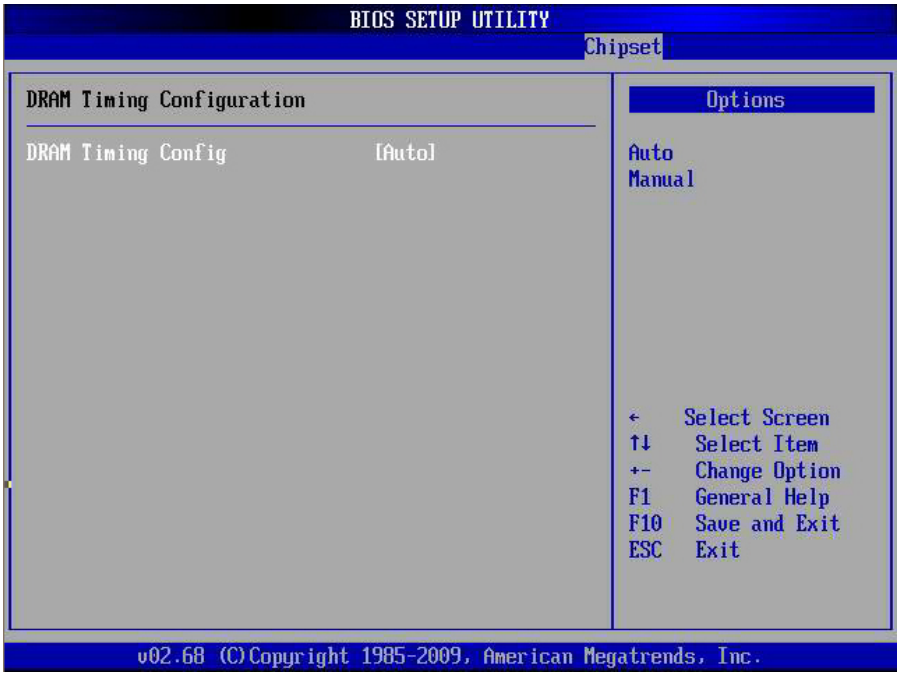
Disabled / 40ns / 80ns / 160ns / 320ns / 640ns / 1.28us / 2.56us / 5.12us / 10.2us / 20.5us / 41.0us / 81.9us / 163.8us / 327.7us / 655.4us

ECC Symbol Size

ECC Symbol Size.

Auto / x4 / x8

6.7.1.3 DRAM Timing Configuration



DRAM Timing Config

Select the DRAM Frequency programming method. If Auto, the DRAM speed will be based on SPDs. If Limit, the DRAM speed will not exceed the specified value. If Manual, the DRAM speed specified will be programmed by users.

Auto / Manual / Limit

6.7.2 South Bridge Configuration

OnChip SATA Channel
Enable or disable OnChip SATA channel.
Enabled / Disabled

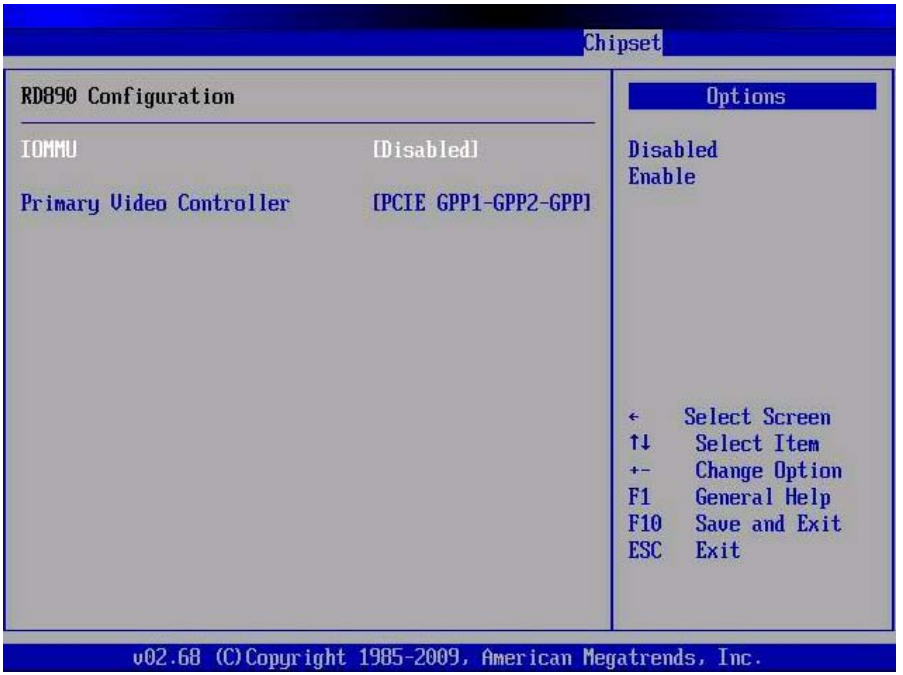
OnChip SATA Type
Select OnChip SATA type.
Native IDE / RAID / AHCI

SATA IDE Combined Mode
Disabled / **Enabled**

PATA Channel Config
SATA as primary / SATA as seondary

Power Saving Features
Enable/Disable power saving features in SB. As general rule, this feature should be disabled for desktop and enabled for mobile. See AMD SB700 Power Saving document for more details.
Enabled / Disabled

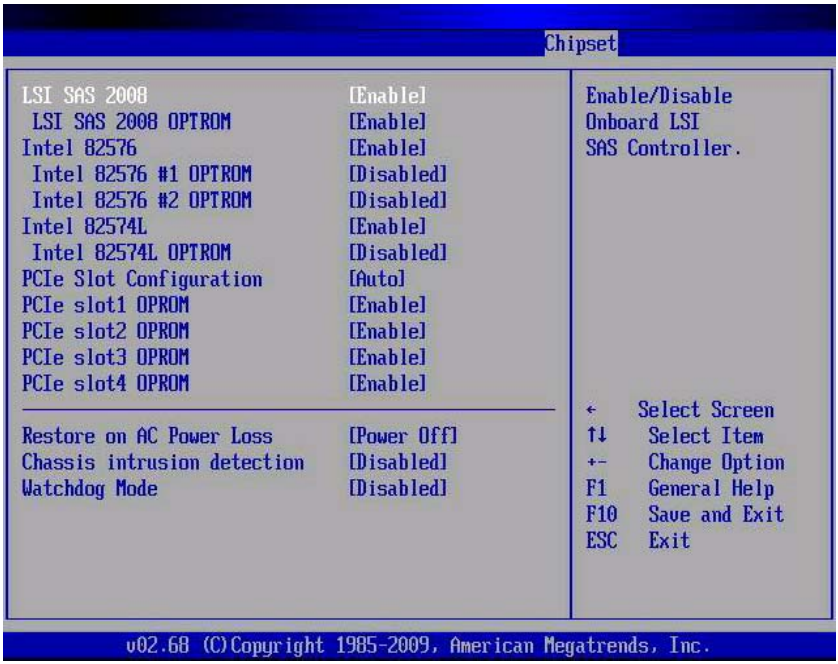
6.7.3 RD890 Configuration



IOMMU
Disable or Enable IOMMU function.
Disabled / Enabled

Primary Video Controller
PCIE GFX-PCI GFX: Video card scan from PCIE bus to PCI bus.
PCI GFX-PCIE GFX: Video card scan from PCI bus (onboard VGA) to PCIE bus.
PCIE GFX-PCI GFX / PCI GFX-PCIE GFX

6.7.4 Onboard Peripherals Configuration



LSI SAS 2008

Enable or Disable the onboard LSI SAS controller.

Enable / Disabled

LSI SAS 2008 OPTROM

Enable or Disable the onboard LSI SAS controller oprom.

Enable / Disabled

Intel 82576

Enable or Disable the onboard Intel 82576 LAN controller.

Enable / Disabled

Intel 82576 #1 OPTROM

Enable or Disable the onboard Intel 82576 LAN#1 oprom.

Disabled / Enable

Intel 82576 #2 OPTROM

Enable or Disable the onboard Intel 82576 LAN#2 oprom.

Disabled / Enable

Intel 82574L

Enable or Disable the onboard Intel 82574L LAN controller.

Enable / Disabled

Intel 82574 OPTROM

Enable or Disable the onboard Intel 82574 LAN oprom.

Disabled / Enable

PCIe Slot Configuration

Configure the PCIe slot3 & slot4 link width.

Auto / 16x

PCIe Slot1 OPROM

Enable or Disable the add-on card oprom on the PCIe slot1.

Enable / Disabled

PCIe Slot2 OPROM

Enable or Disable the add-on card oprom on the PCIe slot2.

Enable / Disabled

PCIe Slot3 OPROM

Enable or Disable the add-on card oprom on the PCIe slot3.

Enable / Disabled

PCIe Slot4 OPROM

Enable or Disable the add-on card oprom on the PCIe slot4.

Enable / Disabled

Restore On AC Power Loss

Configure how the system board responds to a power failure.

Power Off / Power On / Last State

Chassis Intrusion Detection

Disabled: Disable Chassis Intrusion Detection.

Enabled: When a chassis open event is detected, the BIOS will record the event and issue a warning beep.

Disabled / Enabled

Watchdog Mode

Disabled: Disable Watchdog

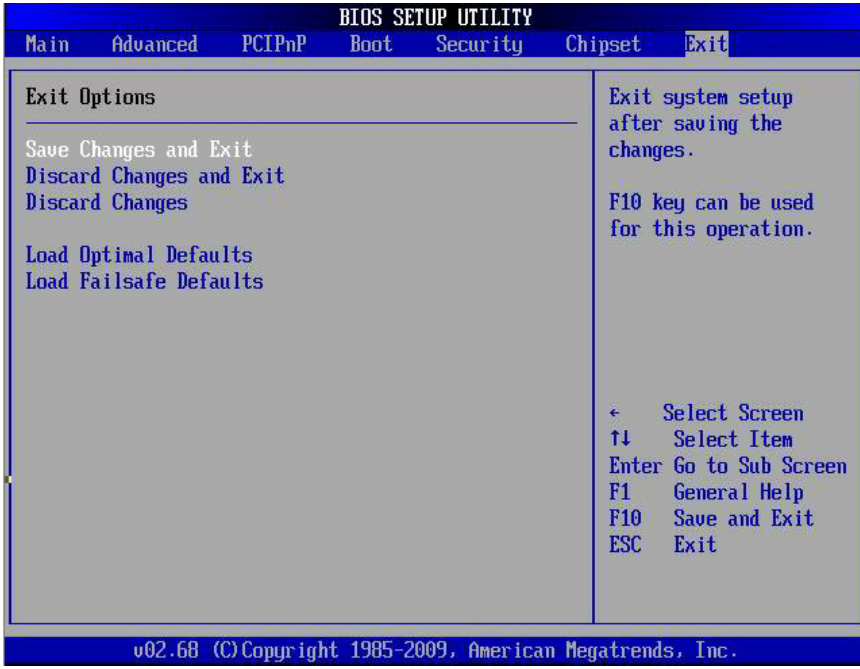
POST: BIOS POST Watchdog, timer counting starts at PowerOn, stops at OS boot

OS: Boot Watchdog, starts at OS boot

PowerOn: Start at PowerOn

Disabled / PowerOn / POST / OS

6.8 Exit Menu


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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Save Changes and Exit

Use this option to exit setup utility and re-boot.

All new selections you have made are stored into CMOS.

System will use the new settings to boot up.

Discard Changes and Exit

Use this option to exit setup utility and re-boot.

All new selections you have made are not stored into CMOS.

System will use the old settings to boot up.

Discard Changes

Use this option to restore all new setup values that you have made but not saved into CMOS.

Load Optimal Defaults

Use this option to load default performance setup values.

Use this option when system CMOS values have been corrupted or modified incorrectly.

Load Failsafe Defaults

Use this option to load all default failsafe setup values.

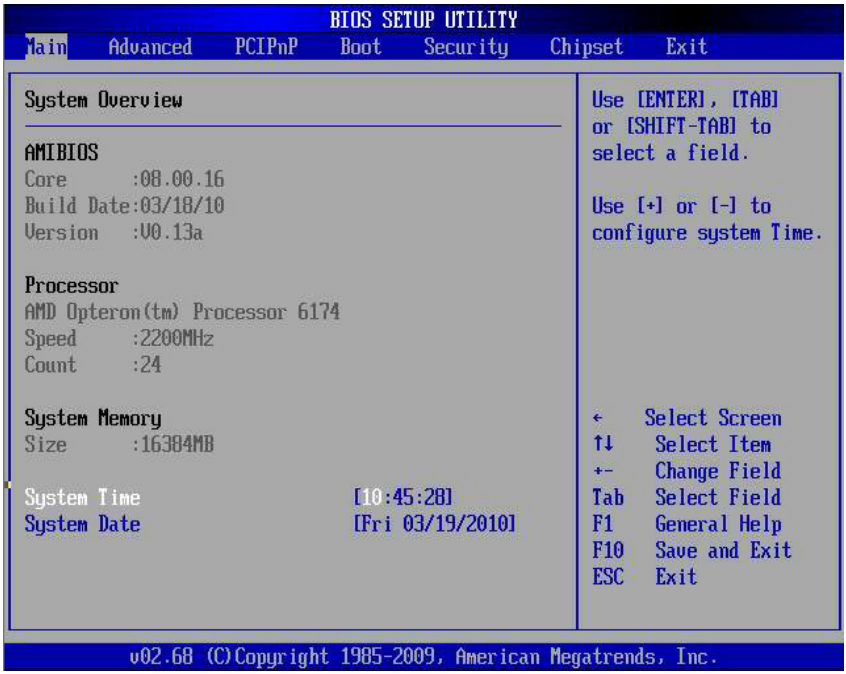
Use this option when troubleshooting.

Appendix I: BIOS Differences

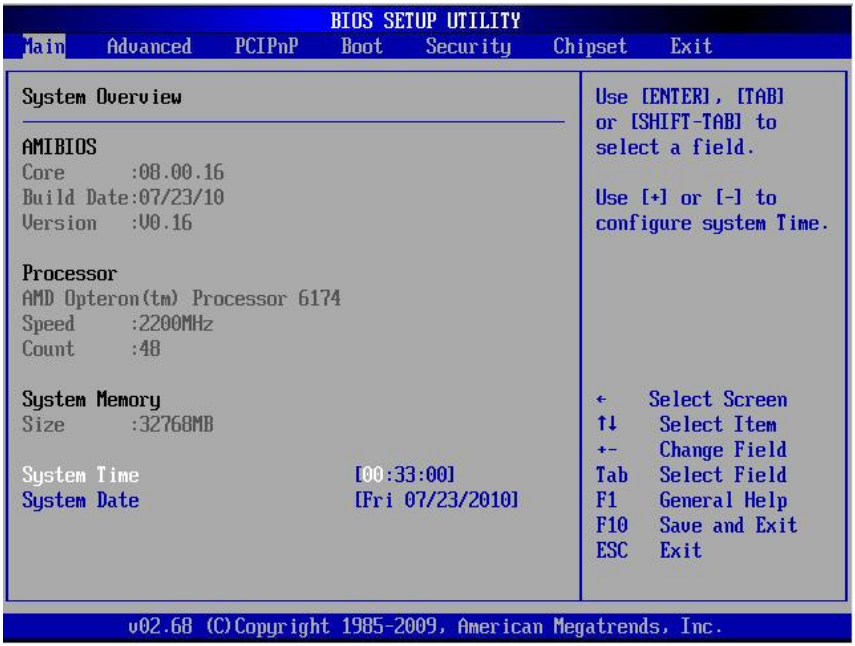
The BIOS of B8812 is similar to S8812 while there are some differences in menus. The following table displays those differences in details.For a complete review of S8812 BIOS,please refer to Chapter 6 BIOS Setup.

1. BIOS Version information

S8812:



B8812:


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
System Overview
AMIBIOS
Core :08.00.16
Build Date:07/23/10
Version :V0.16
Processor
AMD Opteron(tm) Processor 6174
Speed :2200MHz
Count :48
System Memory
Size :32768MB
System Time [00:33:00]
System Date [Fri 07/23/2010]
Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Use [+] or [-] to configure system Time.
← Select Screen
↑↓ Select Item
+- Change Field
Tab Select Field
F1 General Help
F10 Save and Exit
ESC Exit
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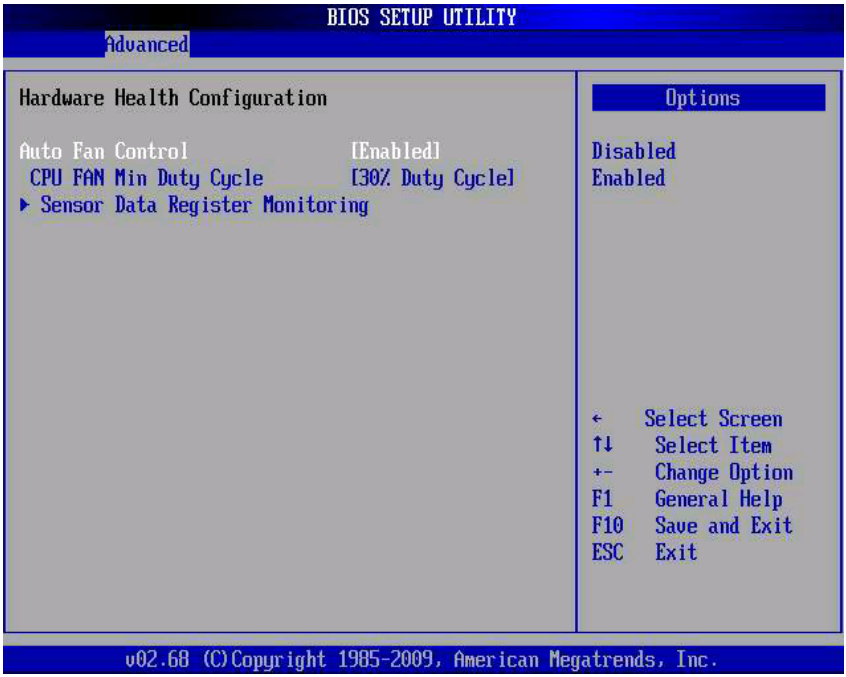
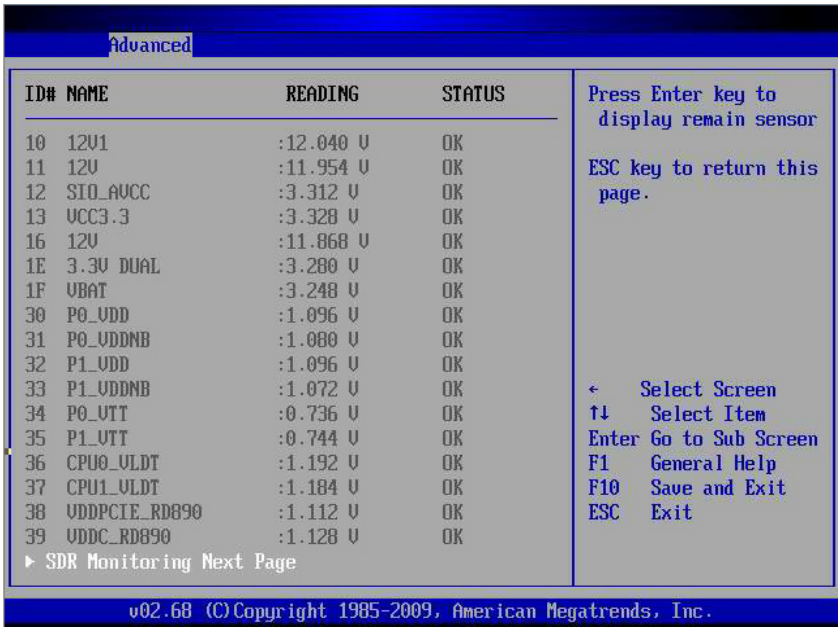
2. FAN Configuration Sub-Menu

S8812:




Advanced
ID# NAME READING STATUS
10 12V1 :12.040 V OK
11 12V :11.954 V OK
12 SIO_AVCC :3.312 V OK
13 VCC3.3 :3.328 V OK
16 12V :11.868 V OK
1E 3.3V DUAL :3.280 V OK
1F VBAT :3.248 V OK
30 P0_VDD :1.096 V OK
31 P0_VDDNB :1.080 V OK
32 P1_VDD :1.096 V OK
33 P1_VDDNB :1.072 V OK
34 P0_VTT :0.736 V OK
35 P1_VTT :0.744 V OK
36 CPU0_VLDT :1.192 V OK
37 CPU1_VLDT :1.184 V OK
38 VDDPCIE_RD890 :1.112 V OK
39 VDDC_RD890 :1.128 V OK
▶ SDR Monitoring Next Page
Press Enter key to display remain sensor
ESC key to return this page.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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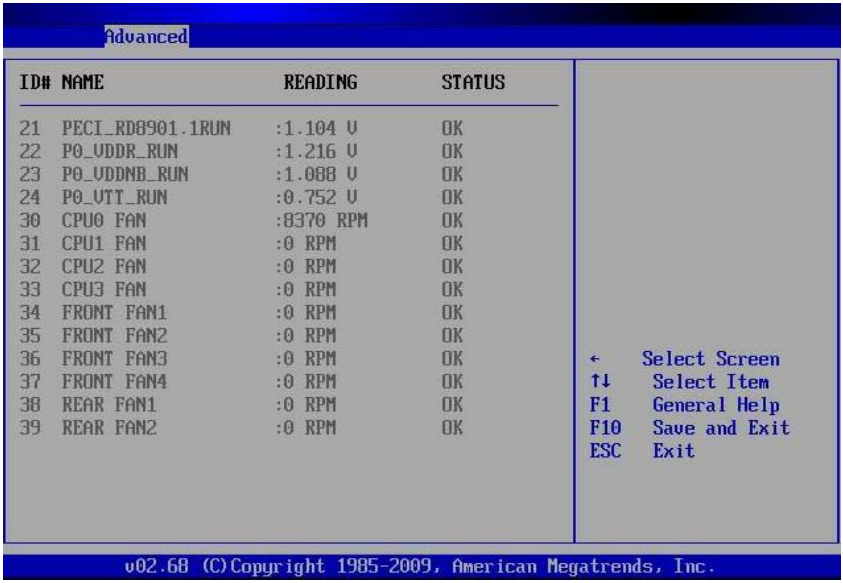
Advanced
ID# NAME READING STATUS
21 PECI_RD8901.1RUN :1.104 V OK
22 P0_VDDR_RUN :1.216 V OK
23 P0_VDDNB_RUN :1.088 V OK
24 P0_VTT_RUN :0.752 V OK
30 CPU0 FAN :8370 RPM OK
31 CPU1 FAN :0 RPM OK
32 CPU2 FAN :0 RPM OK
33 CPU3 FAN :0 RPM OK
34 FRONT FAN1 :0 RPM OK
35 FRONT FAN2 :0 RPM OK
36 FRONT FAN3 :0 RPM OK
37 FRONT FAN4 :0 RPM OK
38 REAR FAN1 :0 RPM OK
39 REAR FAN2 :0 RPM OK
← Select Screen
↑↓ Select Item
F1 General Help
F10 Save and Exit
ESC Exit
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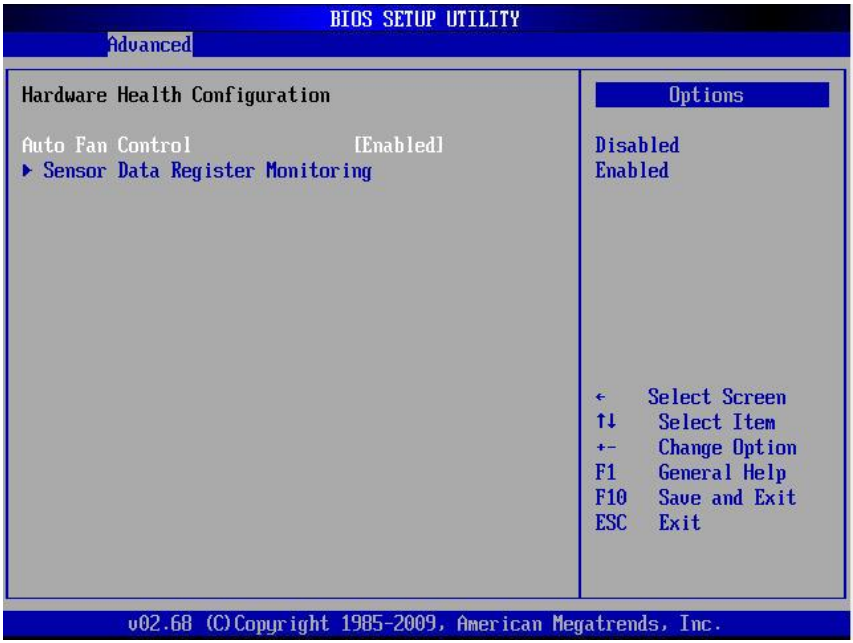
B8812:


BIOS SETUP UTILITY
Advanced
Hardware Health Configuration
Auto Fan Control [Enabled]
▶ Sensor Data Register Monitoring
Options
Disabled
Enabled
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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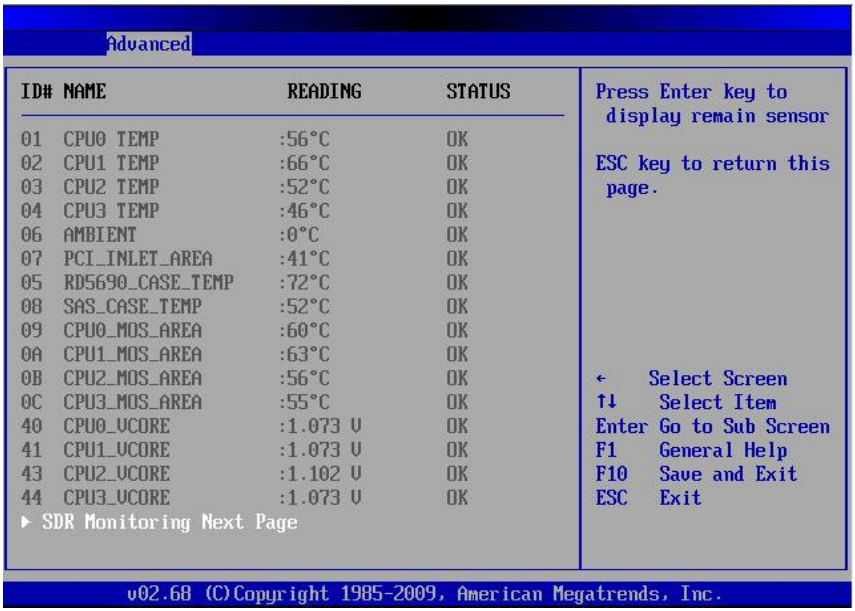
Advanced
ID# NAME READING STATUS
01 CPU0 TEMP :56°C OK
02 CPU1 TEMP :66°C OK
03 CPU2 TEMP :52°C OK
04 CPU3 TEMP :46°C OK
06 AMBIENT :0°C OK
07 PCI_INLET_AREA :41°C OK
05 RD5690_CASE_TEMP :72°C OK
08 SAS_CASE_TEMP :52°C OK
09 CPU0_MOS_AREA :60°C OK
0A CPU1_MOS_AREA :63°C OK
0B CPU2_MOS_AREA :56°C OK
0C CPU3_MOS_AREA :55°C OK
40 CPU0_VCORE :1.073 V OK
41 CPU1_VCORE :1.073 V OK
43 CPU2_VCORE :1.102 V OK
44 CPU3_VCORE :1.073 V OK
▶ SDR Monitoring Next Page
Press Enter key to display remain sensor
ESC key to return this page.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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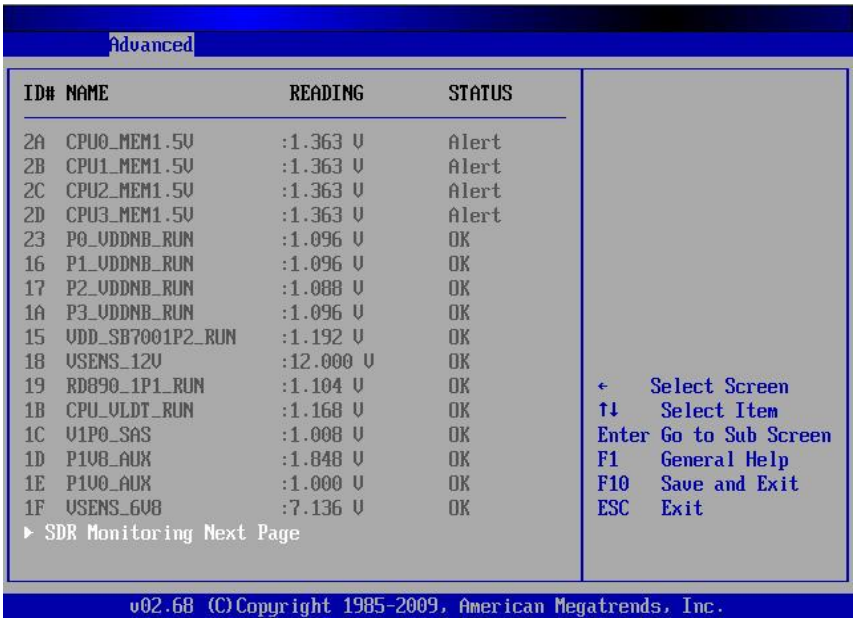
Advanced
ID# NAME READING STATUS
2A CPU0_MEM1.5V :1.363 V Alert
2B CPU1_MEM1.5V :1.363 V Alert
2C CPU2_MEM1.5V :1.363 V Alert
2D CPU3_MEM1.5V :1.363 V Alert
23 P0_VDDNB_RUN :1.096 V OK
16 P1_VDDNB_RUN :1.096 V OK
17 P2_VDDNB_RUN :1.088 V OK
1A P3_VDDNB_RUN :1.096 V OK
15 VDD_SB7001P2_RUN :1.192 V OK
18 VSENS_12V :12.000 V OK
19 RD890_1P1_RUN :1.104 V OK
1B CPU_VLDT_RUN :1.168 V OK
1C V1P0_SAS :1.008 V OK
1D P1V8_AUX :1.848 V OK
1E P1V0_AUX :1.000 V OK
1F VSENS_6V8 :7.136 V OK
▶ SDR Monitoring Next Page
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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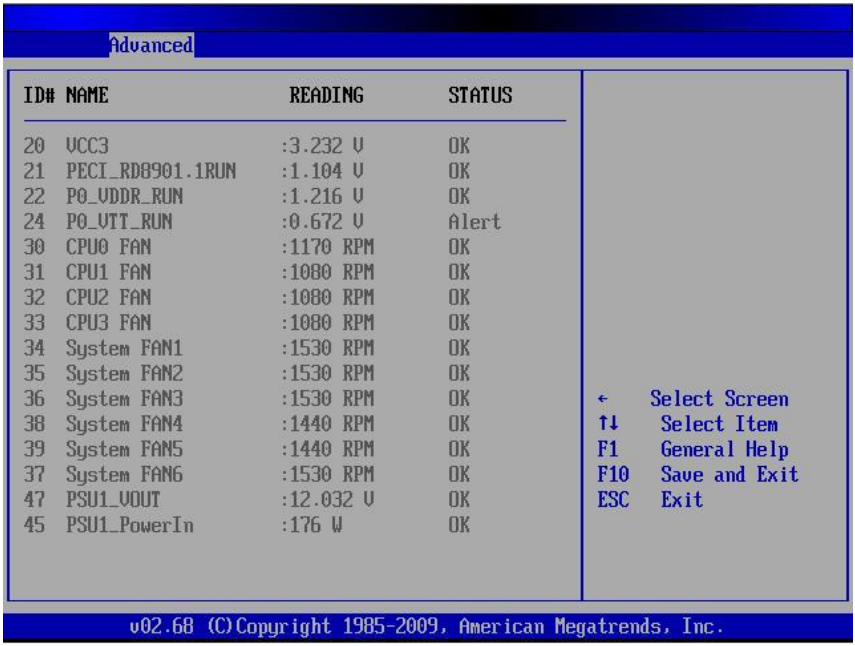
Advanced
ID# NAME READING STATUS
20 VCC3 :3.232 V OK
21 PECI_RD8901.1RUN :1.104 V OK
22 P0_VDDR_RUN :1.216 V OK
24 P0_VTT_RUN :0.672 V Alert
30 CPU0 FAN :1170 RPM OK
31 CPU1 FAN :1080 RPM OK
32 CPU2 FAN :1080 RPM OK
33 CPU3 FAN :1080 RPM OK
34 System FAN1 :1530 RPM OK
35 System FAN2 :1530 RPM OK
36 System FAN3 :1530 RPM OK
38 System FAN4 :1440 RPM OK
39 System FAN5 :1440 RPM OK
37 System FAN6 :1530 RPM OK
47 PSU1_VOUT :12.032 V OK
45 PSU1_PowerIn :176 W OK
← Select Screen
↑↓ Select Item
F1 General Help
F10 Save and Exit
ESC Exit
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Table of Differences

	B8812	S8812
Version	V0.13a	V0.16
FAN	CPU FAN Min Duty Cycle	/

Appendix II: Cable Connection Tables

1. Fan Ctrl Cable

Fan board to S8812 MB		
Fan board	**Connect to**	**S8812 MB**
J8	→	J89

2. Mini-SAS Cable

SATA/SAS Backplane (BP) Board to S8812 MB			
Cable	**SATA/SAS BP Board**	**Connect to**	**S8812 MB**
Mini-SAS Cable-1	HDD BP-1 J15 (1)	→	J17
	HDD BP-1 J16 (2)	→	J17
	HDD BP-1 J17 (3)	→	J17
	HDD BP-1 J13 (4)	→	J17
	HDD BP-1 J18 (SB)	→	J17
Mini-SAS Cable-2	HDD BP-2 J15 (1)	→	J19
	HDD BP-2 J16 (2)	→	J19
	HDD BP-2 J17 (3)	→	J19
	HDD BP-2 J13 (4)	→	J19
	HDD BP-2 J18 (SB)	→	J19

3. B4P PWR Cable for HDD BP

SATA/SAS BP Board to Power Distribution Board (PDB)			
	SATA/SAS BP Board	Connect to	PDB
Short B4P PWR Cable	HDD BP-1 J35 & J36	→	PW14
Long B4P PWR Cable	HDD BP-2 J35 & J36	→	PWJ15

4. FP Ctrl and USB Cable

Front Panel Board (FPB) to S8812 MB			
	FPB	Connect to	S8812 MB
Control Cable	J2	→	J64
USB Cable	J1	→	USB1

5. B4P PWR Cable for Fan BP

PDB board to Fan board			
	PDB board	Connect to	Fan board
B4P PWR Cable	PW12 & PWJ13	→	PW1,PW2 & PW3

6. PDB PWR Cables

PDB board to Fan board			
	PDB board	Connect to	S8812 MB
PSMI Cable	J2	→	J88
2X12P PWR Cable	PW1	→	PWR1
2X10P PWR Cable	PW16	→	PWR2 & PWR3
GPU PWR Cable-1	PW6	→	N/A
GPU PWR Cable-2	PW7	→	N/A

Appendix III: FRU Parts Table

FT48-B8812 FRU Parts

Item	Model Number	Part Number	Picture	Quantity	Description
Chassis Unit	CCHA-0410	432790900001		1	4U FT48 CHASSIS
Motherboard	S8812WGM3NR	412794600002		1	MAIN BOARD,
3.5" HDD Tray	CHDT-0130	340746600039		8	3.5" External HDD Tray
PSU Kit	CPSU-0580	541379460001		1	770W, Power Supply, Delta DPS-770CB B *6
FAN Kit	CFAN-0410	541379090002		2	FRU;FAN ASSY, FAN *3 with top/base cover and lock
Storage Kit	CSTK-0100	541179460101		2	1x M1237 HDD backplane board 1x Mini-SAS cable (to S8812 MB) 1x power cable (for backplane) 4x 3.5" hot-swap HDD trays
Heat Sink & Cooler	CHSK-0520	343794600002		4	1944-LONG-2U-CPU-HEATSINK,Z7 UM409001,102.2X74X49.1MM
Rail ASSY	CRAL-0070	340746600010		1	26" RAIL ASSY
Power Cord	CCBL-0317	332810000397		3	PWR Cord; US,125V,18AWGX3C,L:1800MM
	CCBL-0300	332810000281		3	PWR Cord; EU,250V,H05VV-FX3C,10A,0.75MM

Appendix IV: Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then TYAN Computer Corporation can help. Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. TYAN's website (**www.tyan.com**) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. TYAN also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, TYAN serves multiple market segments with the industry's most competitive services to support them.

"TYAN's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general"

- Anandtech.com

You can contact TYAN Technical Support by using our Online Support System:

http://12.230.196.231/helpstar/hsPages/login.aspx?ReturnUrl=%2fhelpstar%2fhsPages%2fDefault.aspx

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: **http://www.tyan.com**
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: **alt.comp.periphs.mainboard.TYAN**

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you

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